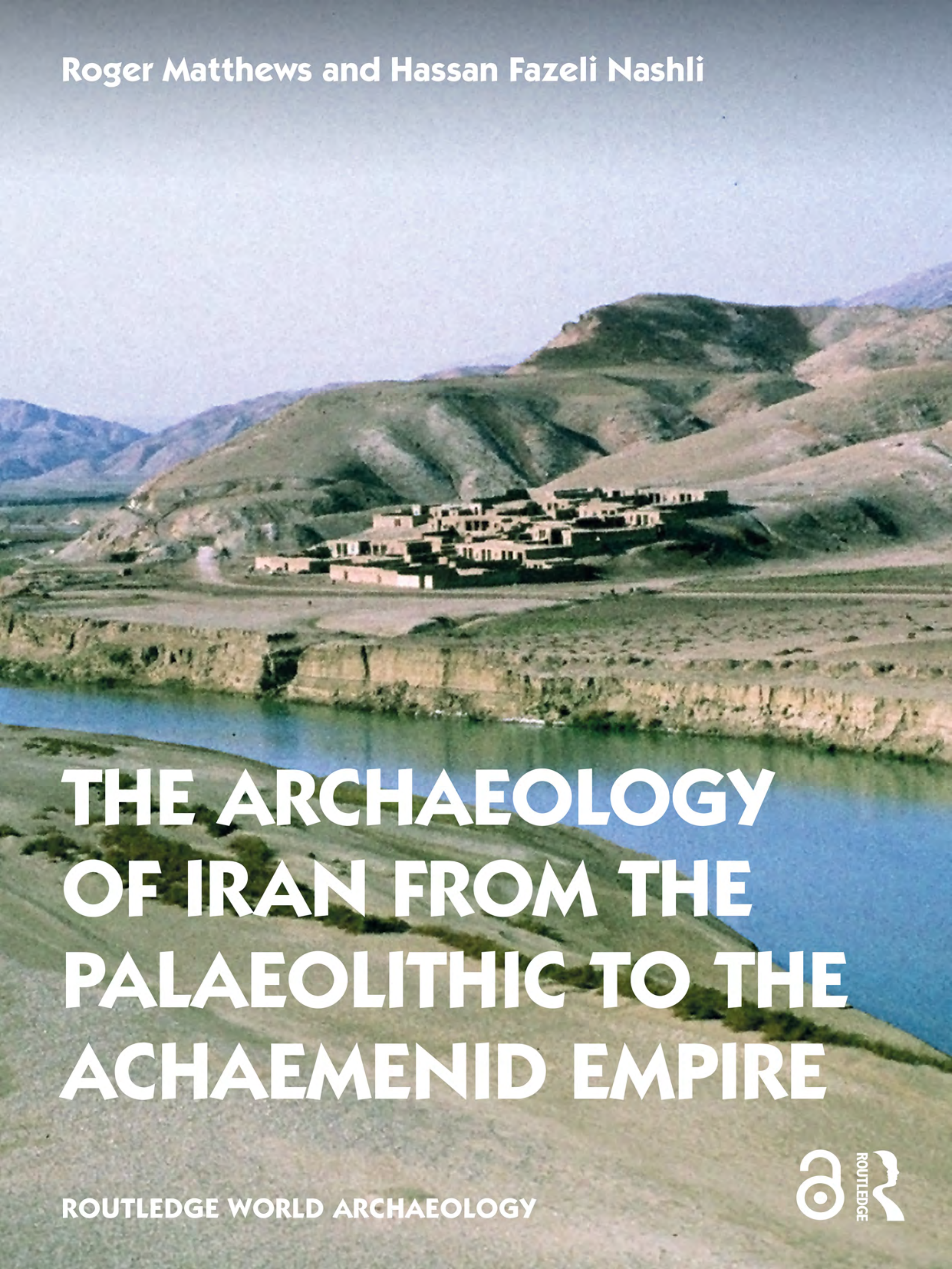
Roger Matthews and Hassan Fazeli Nashli



THE ARCHAEOLOGY OF IRAN FROM THE PALAEOLITHIC TO THE ACHAEMENID EMPIRE

ROUTLEDGE WORLD ARCHAEOLOGY

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The Archaeology of Iran from the Palaeolithic to the Achaemenid Empire

The Archaeology of Iran from the Palaeolithic to the Achaemenid Empire is the first modern academic study to provide a synthetic, diachronic analysis of the archaeology and early history of all of Iran from the Palaeolithic period to the end of the Achaemenid Empire at 330 BC.

Drawing on the authors' deep experience and engagement in the world of Iranian archaeology, and in particular on Iran-based academic networks and collaborations, this book situates the archaeological evidence from Iran within a framework of issues and debates of relevance today. Such topics include human–environment interactions, climate change and societal fragility, the challenges of urban living, individual and social identity, gender roles and status, the development of technology and craft specialisation and the significance of early bureaucratic practices such as counting, writing and sealing within the context of evolving societal formations.

Richly adorned with more than 500 illustrations, many of them in colour, and accompanied by a bibliography with more than 3000 entries, this book will be appreciated as a major research resource for anyone concerned to learn more about the role of ancient Iran in shaping the modern world.

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The Archaeology of Iran from the Palaeolithic to the Achaemenid Empire

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This book is dedicated to the future of Iran's past and to all its students

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Preface and Acknowledgements

This book has been a considerable time in the making. Its history begins with an email exchange in 2002, which led to a trip, which led to making plans and submitting grant applications. Success in the Marie Curie Incoming International Fellowship scheme enabled one of us to spend two years with the other of us at the University of Reading, 2011–2013, conducting research for this book. Now, a full decade and more after the start of that fellowship we feel ready to launch our ship upon the waters. May they be not too stormy.

In this book, which draws heavily on our engagement across the global community of scholars working on Iran from the Palaeolithic to the Iron Age, we take an approach that recurrently stresses and explores the special value of the archaeological evidence. The chapters are arranged broadly chronologically and, for Chapters 4–11, also regionally in sequence. Our approach is to begin by presenting the evidence from key sites, cited in **bold**, site by site and region by region, bracketed by consideration of major themes, debates and issues relevant to each period and more broadly. In Chapter 12, we conclude the volume by reverting to the key issues articulated in Chapter 1.

With regard to spelling of names of sites, peoples and other proper names, we have made no attempt to impose a standard orthography throughout the volume. Our approach has been to accept common practice throughout, by which we almost always mean the spellings adopted by the first or principal excavator of each site, including the highly varied spellings of Tal, Tall, Tell, Tol, Tapeh, Tappeh, Tepe, Teppe, etc. Where commonly used, we have generally retained the prenominal Tal or Tepe designation, especially in the alphabetical lists accompanying the site distribution maps. Similarly, we have taken no strong position on use of the enclitic or *ezāfe* in proper names, again following common usage. Except for Chapter 4, all dates are given as calibrated BC, whether derived from radiometric analysis or otherwise.

We owe enormous debts of gratitude to many people around the world for making this volume possible. Firstly, we sincerely thank all those funding organisations who have supported the research underpinning this book as well as enabling its production in colour and its free availability as an Open Access publication. Generous funding has been provided by the European Union FP7 Marie Curie Incoming International Fellowship scheme (grant PIIF-GA-2010–271787), the University of Reading School of Archaeology, Geography and Environmental Science Research Fund, the University of Reading Department of Archaeology Research Fund, the University of Reading Monograph Open Access Fund, the University of Reading Research Endowment Trust Fund, and, for research on Chapters 4–6, the European Union Horizon 2020 programme through a European Research Council Advanced Grant for project MENTICA – Middle East Neolithic Transition: Integrated Community Approaches (grant ERC AdG 787264). The Institute of Humanities and Social Sciences of Peking University enabled one of us (HFN) to focus on research for this book for an extended period in 2019.

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26 August 2021

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1 The archaeology of early Iran: perspectives from the past for the present

The archaeology of Iran as a field of study

Why study the distant past of Iran? In this introductory chapter we address this basic question by considering a range of issues concerning which the archaeology of Iran has immense potential to inform and enlighten us. Our first answer is that the study of ancient Iran can greatly enhance our appreciation and understanding of Iran today, and that in itself is an aim worth devoting time and attention to. In contemporary geopolitics (Chipman 2019) and throughout recorded history (Axworthy 2007), Iran has played a key and distinctive role in world affairs, a place where ideas, ideologies, movements, technologies and practices have been generated, developed, consumed, imported, reworked and exported in new forms through networks of engagement often spanning much of Asia and well beyond. In historic times Iran performed a central role through the long lifespan of the Silk Roads (Frankopan 2015), a role it sustains within a contemporary successor, the Belt and Road Initiative connecting China to the Mediterranean (Griffiths 2017). Iran is also a country that has frequently been misunderstood on the world stage, often because of ignorance of its history and its culture and of the ways in which they have shaped modern Iran and the world around it. While the ancient pasts of Greece and Rome form staple fare on school and university curricula, and the visually magnetic monuments and mummies of ancient Egypt captivate generations of school-children, "the vast Iranian panorama in which our ancestors arose and flourished seems as remote to the majority as the moon" (Iliffe 1953: 1), a statement from decades ago that is perhaps even more valid today than it was then. Our first reason for studying ancient Iran, therefore, is in order to expand and enhance our understanding of Iran today through appreciation of its deep-time history and culture.

More directly, in this book we propose to employ the archaeology of Iran as a portfolio of case-studies, period by period and diachronically, with which to address major concerns that archaeologists have increasingly foregrounded in recent years. A 2014 review of "Grand Challenges for Archaeology" articulated 25 issues for future archaeological investigation, focused on "dynamic cultural processes and the operation of coupled human and natural systems" with the aim "to inform decisions on infrastructure investments for archaeology" (Kintigh *et al.* 2014: 5). The authors grouped these issues, which might more aptly be titled "Global Challenges," into five themes: (i) emergence, communities and complexity; (ii) resilience, persistence, transformation and collapse; (iii) movement, mobility and migration; (iv) cognition, behaviour and identity; (v) and human-environment interactions. The archaeology of Iran has special potential to contribute to all these major areas of concern, as we attempt to illustrate throughout this book.

At the same time, archaeologists, anthropologists and historians have begun to explore the deep-time origins and early development of social inequality, articulating trends and patterns through analysis of material attributes such as size and complexity of household dwellings, access to storage space and variation in quantity and type of grave goods, on the basis that the pervasiveness of inequality across much of the world today (Wilkinson and Pickett 2009) can only be understood through historical understanding of how we got here: "Inequalities develop through historical processes that operate on many levels, from the individual to the society, from the kin group and neighbourhood to the state" (Smith *et al.* 2018: 5; Fochesato *et al.* 2019). Again, the past of Iran provides a wealth of case studies with which to investigate issues of social inequality within the context of trajectories of change and continuity across millennia. Many of the earliest written records of Mesopotamia and Iran, dating from *c.* 3200 BC onwards, are concerned with the administration of slaves, male and female, adult and child, who were put to work on massive state projects or exchanged as gifts amongst the dynastic urban elite groups residing in the cities and palaces of southern Iraq and south-western Iran (Bartash 2020). How significant was the role of slave labour in the development of early Iranian societies, and how can we deploy archaeology to assist in understanding early steps in the development of social inequalities?

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Along with Iran's neighbour to the west, Iraq or ancient Mesopotamia, it is hard to name another country of the contemporary world that, on the basis of what we already know about its past, can contribute such rich and detailed historically contingent case-studies with which to inform and address these global challenges and issues, all of which can be framed within a discourse of deep-time perspectives on planetary sustainability (Satterwhite *et al.* 2016), the single most urgent and important research field across today's academic disciplines.

From Iran's key role in the development of hominin and early human communities and their initial diffusions into and across Asia, to its unique significance in the early domestication of wild animals such as goat, the intensification of plant cultivation leading to full agriculture, and the increasing sedentarisation of human societies more than 10,000 years ago, and from the pristine development of early state-level societies accompanied by some of the world's earliest complex bureaucracy and writing practices from 5,000 years ago, to the growth and expansion of some of the most impactful and diverse empires from 2,500 years ago, Iran makes a very special and fundamental contribution to the history, culture and contemporary conditions of humanity on planet Earth. We could not agree more with the words of an authority on Iran in the periods following those covered in our study: "There are aspects of Iranian civilisation that, in one way or another, have touched almost every human being in the world. But the way that happened, and the full significance of those influences, is often unknown and forgotten" (Axworthy 2007: xiv). We plan to illuminate and illustrate those unknown and forgotten influences and ways throughout this book, which is our second reason for studying ancient Iran.

But where and what is "ancient Iran"? We talk of "Iran" as if the term relates to a consistent geographic entity through time. The idea of "Iran" in the most ancient past is of course an anachronism. As we will explore in this volume, it is impossible to investigate the archaeology of Iran without considering at the same time the situation of Iran, as defined today, within a malleable matrix of lands near and far. Thus, the notion of "Iran" must be highly fluid through time, just as fluid as the contours and borders of the ancient societies dwelling in "Iran" at any time in the past. The lifeways of Neolithic human societies living in the high Zagros mountains at 8000 BC can only be apprehended in the context of contemporary developments across the modern border in the foothills of Iraqi Kurdistan, while early state-level developments such as the origins of bureaucracy and early writing on clay tablets in Late Chalcolithic Khuzestan only make sense when we also take account of evidence from sites in the south of Iraq such as Uruk and Jemdet Nasr. The distinctive Early Transcaucasian Culture of the Early Bronze Age has to be studied as a large-scale transregional phenomenon spanning lands of the southern Caucasus, north-western and western Iran, eastern Turkey, northern Syria and into the Levant, while for the thriving craft and trade centres of south-eastern Iran in the later third millennium BC our field of view expands to the east to include Central Asia and into South Asia. As the first "world empire," the Achaemenid Persian empire of the Iron Age also of course demands such a transregional approach. Our third reason for studying ancient Iran, then, is because of its special importance in enhancing understanding of much larger-scale socio-cultural phenomena in whose origins and development many other lands and peoples were involved.

Characterising Iran: a land of "prismatic diversity"

That said, our book is first and foremost about Iran and about what happened in prehistory and early history within the lands of Iran as defined by its modern borders. Within all the transregional cultural phenomena discussed in the preceding section, and in many more investigated through this book, we contend that there is a core and distinctive "Iranian" element that can be associated with the physicality of place that is Iran and with the human societies living there, throughout the deep-time patterns and processes we are about to trace, while eschewing unfounded assumptions of ethnic, linguistic, genetic or any other form of continuity, as well as assumptions of a uniform or predictable relationship between landscapes and peoples settled thereon. Indeed, as discussed below, throughout this book we reject a so-called *longue durée* approach to Iran's ancient past that asserts underlying structural continuities as shaping fundamental elements of Iranian societies while allowing variations on a theme. How then might we characterise "Iran" in this sense of its distinctive, core contributions to the great episodes of the past? We should begin by acknowledging the clear challenges in undertaking such a task, as adroitly phrased by Lara Fabian (2018: 1120): "a central characteristic of the stories of ancient Iran lies in the region's prismatic diversity and confounding complexity. As hard as they are to capture, it is these traits that we should make central as we expand our scholarly engagements with the space." What, then, are those central traits?

As we discuss in Chapter 2, the landscapes of Iran are highly diverse, providing special challenges and opportunities for their resident human communities. The lands of Iran have impacted in so many ways the lives of the peoples, animals and plants that have made their homes there, prescribing some limits to existence and behaviour while stimulating human creativity and resilience in negotiating or overcoming those limits, in a complex, nonlinear relationship through time. Any study of Iran's past has to take account of ancient landscapes, climates and environments in attempting to reconstruct past lifeways, as we do recurrently in this work. Many writers have commented on the significance of Iran's physical geography, climates and environments in impacting the lives of the peoples living therein and their socio-political structures. In his classic work *Iran from the Earliest Times to the Islamic Conquest*, the archaeologist Roman Ghirshman (1954a: 114) set out his thoughts on this topic:

> Iran is not watered by rivers like the Nile, Tigris, and Euphrates which by their yearly floods bring fertility to the country. Nor does it enjoy a regular season of beneficial rains stimulating the earth to production. From earliest antiquity, the question of water has been vital, for man could settle only where irrigation was possible. Thus the inhabitants were perforce scattered, and the population was far less dense than in Egypt or Mesopotamia. This is well illustrated by the dispersion of *tells* or artificial mounds, remains of ancient settlements, which the modern traveller finds lying scores of miles apart. Physical conditions thus led to the development in each district, and even in each valley, of a kind of particularism, traces of which have not even yet disappeared. This is the reason why Iran contained, and still contains, so many nomadic, semi-nomadic, and sedentary tribes who have preserved their dialects, manners, and customs. This is why, politically, the unity of Iran depended, and still depends, on the character of the ruling dynasty.

As we will explore in particular in the later chapters of this book, the character of ruling elite groups can indeed be fundamental to structuring and unifying the daily lives of the peoples ruled by them, as well as to their proneness to frequent overthrow and reformulation. But, more generally, while Iran's physical and environmental attributes have always constituted a set of circumstances, time after time, within which human societies have lived as best they can, we interrogate the predictability of specific human responses to those attributes. Above all, in this book we aim to show that the variability, diversity and often fragility of the manifold societies of Iran's past vividly demonstrate the ingenuity, innovativeness, agency and historical contingency of the human social soul in devising new ways to live together, to cope with the challenges and to generate and seize new opportunities for individual and social development.

Ghirshman (1954a: 50) highlighted another geographic attribute of Iran that he saw as persistently impacting its resident human societies – its key location between Mesopotamia, Anatolia and, ultimately, Europe to the west, and all of Asia to the east, and its consequent role as a cultural mediator and communicator between these great regions of the Old World: "Iran, as we have seen, was a highway for the movement of peoples and for the transmission of ideas. From the prehistoric period onwards, and for 1,000 years more, it held this important position as an intermediary between East and West. In return for what it received it never ceased to give; its role was to receive, to recreate, and then to transmit." Through this book we will examine case studies of how Iran recurrently acts as a cultural communicator and mediator by its engagement with contemporary societies around its borders.

In a concluding chapter, boldly entitled "The Personality of Iran," to the magisterial *The Cambridge History of Iran I. The Land of Iran*, in itself a rich collection of expert essays on all aspects of Iran's geography, the geographer W. B. Fisher (1968b: 734) was also keen to emphasise the connection between Iran's "special geographical character" and its "historical tradition." Pointing to Iran's pronounced physiography, its extremes of climate, its dearth of great rivers, its suitability for integrated food production systems of agriculture alongside seasonal pastoralism and its relative abundance of desirable natural resources, Fisher detected certain continuities of cultural response, at least in recent historical times, generating a distinctive Iranian identity through time (1968b: 739). Fisher's final comments closely echo those of Ghirshman cited above: "If we seek to define Iran's function as a state and as a human grouping in terms of a 'personality,' then the country can be said to generate, to receive and transmogrify, and to re-transmit." Let us explore throughout this book, by meticulous examination of the material remains from its past, these bold and profound statements regarding the character of Iran and its peoples.

What is this book about? Scope, themes, issues

In this book we investigate the archaeology of Iran from the very earliest times, the Lower Palaeolithic period, when prehuman hominins began to leave their material traces across much of the land, through the Upper Palaeolithic, and all of the Neolithic, Chalcolithic, Bronze Age and Iron Age periods of Iran's past. These periods are of course conventional archaeological divisions of the past which need not bear significant relation to genuine socio-cultural episodes of that past. Nevertheless, we believe it is possible to articulate distinctive characteristics and features of Iranian societies through these various periods, drawing on the often rich but always patchy archaeological evidence and, when we have it, on the historical evidence too, if only indirectly and contextually. We close the book with the end of the Achaemenid empire at *c.* 330 BC. We have chosen this end-point partly because study of the post-Achaemenid periods of Iran's past requires a major reorientation of approach that must incorporate fully the historical and archaeological evidence, which would require a whole additional volume, and partly because the end of the Achaemenid state can reasonably be viewed as a genuine end-of-era event: "When Persepolis went up in flames at the feast of the Macedonian conqueror, a world lasting several millennia finally expired" (Burney 1977: 204), in the evocative words of one pioneering investigator of Iran's ancient past, with whom we empathise. At the same time, we salute those scholars bold, skilled and knowledgeable enough to treat regions or aspects of Iran's past across the rather arbitrary dividing lines of our archaeological and historical classificatory systems. Daniel Potts' *The Archaeology of Elam. Formation and Transformation of an Ancient Iranian State* (Potts 1999, 2016; see also Potts 2011a) is exceptional in this regard.

Mention of Potts' book prompts us to express at the outset our alignment with his views on deep-time history, broadly understood, as expressed at the conclusion of his volume on Elam. In examining the archaeology of Elam over millennia of prehistory and history, Potts (2016: 430–432) rejects the interpretive historical framework of *la longue durée*, with its notions of deep-time structures of continuity underpinning shifting historical cycles, in favour of *la courte durée*, where "periodic realignment and transformation" marked by "events and periods of destabilization followed by readjustments and reconstruction" seem more apposite for thinking about the long-term archaeology and history of Elam. Such an approach involves detailed, case-by-case investigation and explication of the evidence, which is always partial and usually complex, forming an evidential basis upon which to draw out wider themes and issues, which we set out here and return to in Chapter 12.

What then are the major themes and issues recurrently addressed through this book? Firstly, the deep-time past of Iran provides us with a special opportunity to explore **human–environment interactions**, an issue of unique significance for us today. Several studies in recent years have explored the relationships between climatic and environmental change and the human societies of ancient Iran. Particularly ambitious is the analysis by Sharifi *et al.* (2015), which attempts to correlate occurrences of high aeolian dust, as attested in a sediment core spanning 13,000 years from Lake Neor in north-western Iran, with multiple episodes of societal collapse across Iran from *c.* 3000 BC onwards. The authors rightly stress that the human–environment relationship is a two-way process, with human activity in the form of deforestation and agro-pastoral intensification potentially feeding into a cycle of increased dust generation, which then negatively impacts on human communities and their crops and animals. In this context, most scholars stress the fragility of complex human societies of Iran to even slight modifications in climate and environment. Thus, Farshad and Barrera-Bassols (2003: 284) regard Iran's landscapes as "environmentally fragile. The fragility is caused by water scarcity, susceptibility to degradation, climate variability, and topography," issues explored further in Chapters 3 and 12 and throughout the book. A recurrent feature of ancient, and indeed modern, societies of Iran is their ingenuity and engineering inventiveness in addressing the basic issue of water scarcity, attested in Chalcolithic irrigation channels, Iron Age rock-cut canals, the famed Iranian qanat system and much else besides (Magee 2005a; Wilkinson *et al.* 2012). But there is clear variability in the resilience of human societies across Iran in the face of sometimes global-scale climatic and environmental challenges (e.g., at the Late Bronze Age-Early Iron Age transition). In each case we have to investigate the specifics of the evidence region by region rather than arriving too readily at generalising interpretations. As a major review highlights: "Archaeology demonstrates not only the importance of climate to human history but also shows the great diversity in human cultural responses to environmental change even in earlier prehistory" (Hudson *et al.* 2012: 316).

Secondly, throughout this book we investigate a host of issues relating to **identity, individual and social**. Iran has always been and remains today ethnically a highly mixed country, estimated on the basis of current genetic studies (Mehrjoo *et al.* 2019) to comprise Persians (65%), Iranian Azeris (16%), Iranian Kurds (7%), Iranian Lurs (6%), Iranian Arabs (2%), Iranian Baluchis (2%), Iranian Turkmen (1%), Qashqai and other tribal groups (1%), plus small numbers of Armenians, Assyrians, Georgians, Jews and Zoroastrians (all <1%). Iran hosts a total of 21 distinct ethnic groups, with their own languages or dialects and cultural traditions, and largely the outcome of autochthonous development of populations in Iran over centuries and more. Mehrjoo *et al.*'s (2019: 1/29) summary of the genetic make-up of Iran today serves as a useful template for thinking about Iran's identity at all stages of its past: "Iranians, while close to neighboring populations, present distinct genetic variation consistent with long-standing genetic continuity, harbor high heterogeneity and different levels of consanguinity, fall apart into a cluster of similar groups and several admixed ones and have experienced numerous language adoption events in the past," a picture congruent with Iran's role both as a critical geographical crossroads and as a host to long-term resident communities who have become integral creators of and key components of Iran's deep-time geo-bio-historical trajectories.

Within the broad field of identity, we strive to address issues of **gender and age**, as far as the evidence permits. We heed the call to action by Aurelie Daems (2018: 763, 777) with regard to the study of ancient Elam that, in view of the general failure of archaeologists and historians, and not solely those studying Iran, "to speak of the participation of women in society," we need "to actively engage with far more ambitious questions to gain insights into what it meant to be a woman in Elam. Only then can we alter the discourse, from a top-down, descriptive approach centred on the elite and its iconography, to a bottom-up holistic view that does justice to the women and men alike who helped shape the Elamite world." Additionally, we can rephrase this profound statement by augmenting "the women and men" with "and the children and the elderly," who also too rarely feature in our research programmes into the past.

Thirdly, particularly in Chapters 6–11, a recurrent key issue of the book and a tangled problem through Iranian late prehistory and early history, is that of **complex societies, including states and empires**. How do such polities develop and how do they operate and impact subject peoples and their environments, for example through expansion and intensification of settlement and of agricultural production? Intimately connected to this problematic is the issue of bureaucracy and of writing in particular. Jacob Dahl (2018: 393–394), a leading authority on writing in ancient Iran, has made the striking statement that "Writing is invented more times in Iran than in any other place in the world," stimulated by "an extraordinary ingenuity rarely matched in other ancient civilizations." What are the socio-cultural and political factors that lie behind the special place of writing in ancient Iranian societies and, in particular, in the ways in which they enter, exit and re-enter the worlds of writing on so many occasions through its past? As we will see, the rich Iranian evidence allows us to examine these issues at the very birth of state-level societies in the Chalcolithic and Early Bronze Age as well as within the context of more mature states and empires of the Iron Age.

Who is this book for?

We have planned and written this book for anyone – scholar, student, interested individual – with a concern to further their knowledge and understanding of the past of Iran and of how that past enlightens us with regard to the key issues outlined above and throughout the book. We aim to demonstrate the richness and diversity, as well as the patchiness, of the evidence recovered from 125 years of archaeological excavations and surveys across Iran. We have drawn heavily both on original field reports, many of them difficult to access, as well as on synthetic studies of specific issues in the archaeology of Iran. We have been lavish in referring to and in citing quotations from published books and articles, partly in order to provide a high-level research resource for readers wishing to pursue particular areas of concern and also as an illustration of the advanced levels of research and writing that Iranian archaeology stimulates its scholars to aspire to and to achieve.

We aim for this book to be a showcase for Iranian archaeology that does verbal and visual justice both to the subject and to its practitioners from around the world, with Iranian archaeologists increasingly leading the way and indeed setting an example for other nations of the Middle East and the world to follow. We never cease to be impressed by the numbers and the high-quality of Iranian post-graduate students across the country with the passion, commitment and expertise to take the discipline of Iranian archaeology forward, often in highly challenging circumstances. They deserve all the support we can provide.

Finally, Daniel Potts in his book on Elam (2016: 438) notes regretfully that "Compared to the number of scholars working in the fields of Egyptology, Syro-Palestinian archaeology, or Mesopotamian studies, Iran has never claimed a large share of scholarship on a worldwide level," relating this shortcoming partly to the lack of suitable synthetic and interpretive works dedicated to the study of ancient Iran. We hope that our book takes at least a step in addressing that concern.

2 Placing Iran: land, environment and ecology

Introducing Iran: landscapes of contrast and challenge

Anyone visiting Iran today and traveling through some of its landscapes will be impressed at the diversity and drama of Iran's physicality of place. From seashores to upland plains, from high mountains to alluvial flats, and from jungle-clad hillslopes to bleak salt deserts, the spectacular variety afforded by Iran's geography is matched by few countries in the world. We begin by approaching Iran as a physical place, in order to ground and situate its past and to evaluate the roles of its landscapes within its contribution to world prehistory and history. Throughout the book we stress the significance of landscape, environment and climate in facilitating and constraining the development of human societies across Iran as well as in structuring Iran's relationships with its neighbours. At the same time, we aim to explore the diversity and contingency of human social trajectories within parameters contoured by the physical environment. At the outset, we need to develop awareness of Iran's physicality and the immense diversity and richness in its geology, mineral wealth and biogeography (Ehlers 1980).

A truly global perspective (Figure 2.1) demonstrates the strategic significance of Iran's location as a fulcrum of Eurasia, forming a critical land bridge connecting major components of the Eurasian continent. Situated between the steppes and deserts of Central Asia to the east, the riverine plains of Mesopotamia to the west and the Caucasus to the north and the plateau of Anatolia to the northwest, the land of Iran has been central to major developments in human history, forming an arena of communication and interaction between manifold peoples and societies of the ancient Old World reaching far back even into prehuman times. Despite its upland nature, Iran is essentially an open country, with easy access to and from the plains to the west and the valleys to the north, as well as to the steppe to the northeast and the sea routes of the Persian Gulf in the south. Symptomatic of this openness is Iran's key role in the Silk Road interactions of Roman and later times (Frankopan 2015), as well as its proneness through the ages to invasion and incursion from outside, of peoples bringing with them their animals, crops, ideas, practices and products.

Iran is a large and diverse country, with a land area of 1,648,000 km^2, approximately six times that of the United Kingdom, and with a total border length of *c.* 4,500 km. Modern states sharing land borders with Iran include Iraq and Turkey to the west, Armenia and Azerbaijan to the northwest, Turkmenistan to the northeast and Afghanistan and Pakistan to the east and southeast (Figure 2.2). Iran's northern and southern borders are partly formed by major stretches of water: to the north, the largest inland lake in the world, the Caspian Sea, and to the south, a 1,770 km-long coastline with the Persian Gulf and the Gulf of Oman. Iran is one of the most seismically active countries of the world, subject to episodes of severe destruction and displacement through earthquake activity (Ambraseys and Melville 1982; Walker and Jackson 2004; Berberian *et al.* 2012). The attraction of human settlement to freshwater springs along active fault zones renders them prone to recurrent disaster (Berberian and Yeats 2001, 2017; Jackson 2006; Quigley *et al.* 2011), including dramatic landslides as occasionally attested at archaeological sites (Heydarian *et al.* 2017). Study of the evidence for, and impact of, earthquakes at archaeological sites in Iran is not well-developed, but an integrated analysis of stratigraphy and monuments at sites in the region of the Kazerun fault in western Fars detected evidence for very large earthquakes at *c.* 3850–3680 BC and at *c.* 3030 BC, which may have resulted in site abandonments (Berberian *et al.* 2014).

Most of Iran is highland, with an average height above sea level of over 1,000 m, making it one of the highest countries in the world (Figure 2.3) (Makki 2017). At 5,610 m high, Mount Damavand in the Alborz range, 45 km east of Tehran, is the highest mountain in all Eurasia west of the Himalayas, while the land altitude drops to −26 m on the plains along the south Caspian shores, less than 100 km due north of Damavand. Cross-sections through Iran (Figure 2.4) vividly illustrate both its predominantly upland nature and its contrast to the surrounding topography. In essence, Iran is composed of high mountain ranges enclosing elevated plateaux or basins, with relatively restricted areas of low-lying plain. The physical geography of Iran strongly influences the course and

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Figure 2.1 Iran in its global context: fulcrum of Eurasia (Google Earth 2018).

nature of routes of communication across the country, a characteristic that can be traced in settlement patterns of all periods from the Palaeolithic onwards (Vahdati Nasab *et al.* 2013a; Petrie 2013b: 7, Figure 1.1).

In keeping with its geographical location, Iran's climate at the broad scale is determined by a mix of factors, with the western, higher reaches of the country affected by dominant westerly weather conditions bringing precipitation from the Mediterranean, while the eastern, lower regions of Iran are hotter, more arid and more impacted by the monsoon systems of the south (Ganji 1968; Alijani and Harman 1985; Kehl 2009; Djamali *et al.* 2011a; Jones 2013; Jones *et al.* 2013; Fallah *et al.* 2017; Petrie *et al.* 2018). Lower levels of rainfall also affect Iran on a northwest-southeast transect (Figure 2.5). Above all, these variations are orographically determined, with the Zagros and Alborz ranges intercepting almost all the precipitation ultimately derived from the Mediterranean, Black Sea and Caspian Sea: "Disposition of relief therefore conditions the contrast between the rainy outer flanks, and the sub-arid to almost completely rainless inner basin regions" (Scharlau 1968: 187). Broadscale features of Iran's climate, past and present, include high variability in diurnal and annual temperatures, low annual precipitation ranges and strong seasonality characterised by hot/dry summers and cold/stormy winters (Stevens *et al.* 2001).

An equally defining characteristic of Iran, more broadly, is the scattered distribution of high-quality soils capable of intensive agricultural exploitation, as well as of water sources needed to farm those soils (Figure 2.6) (Ehlers 1985).

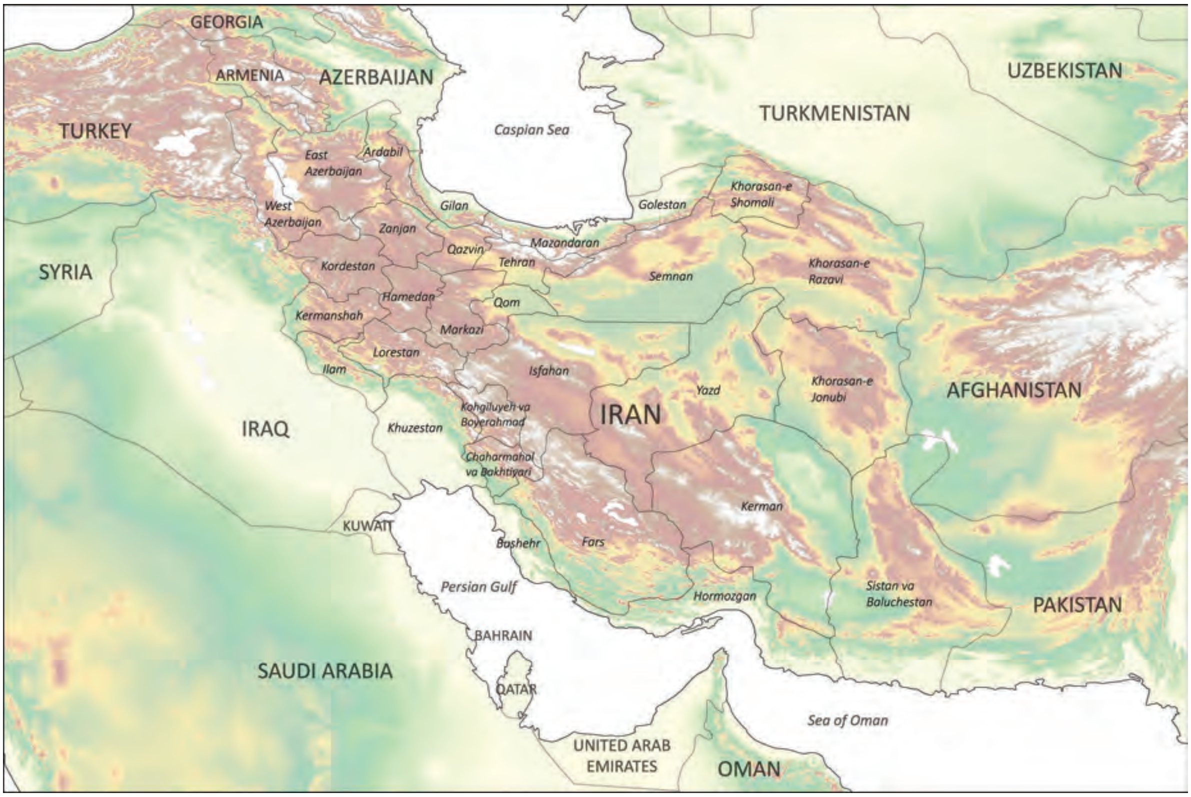

Figure 2.2 Iran: its provinces and its neighbours.

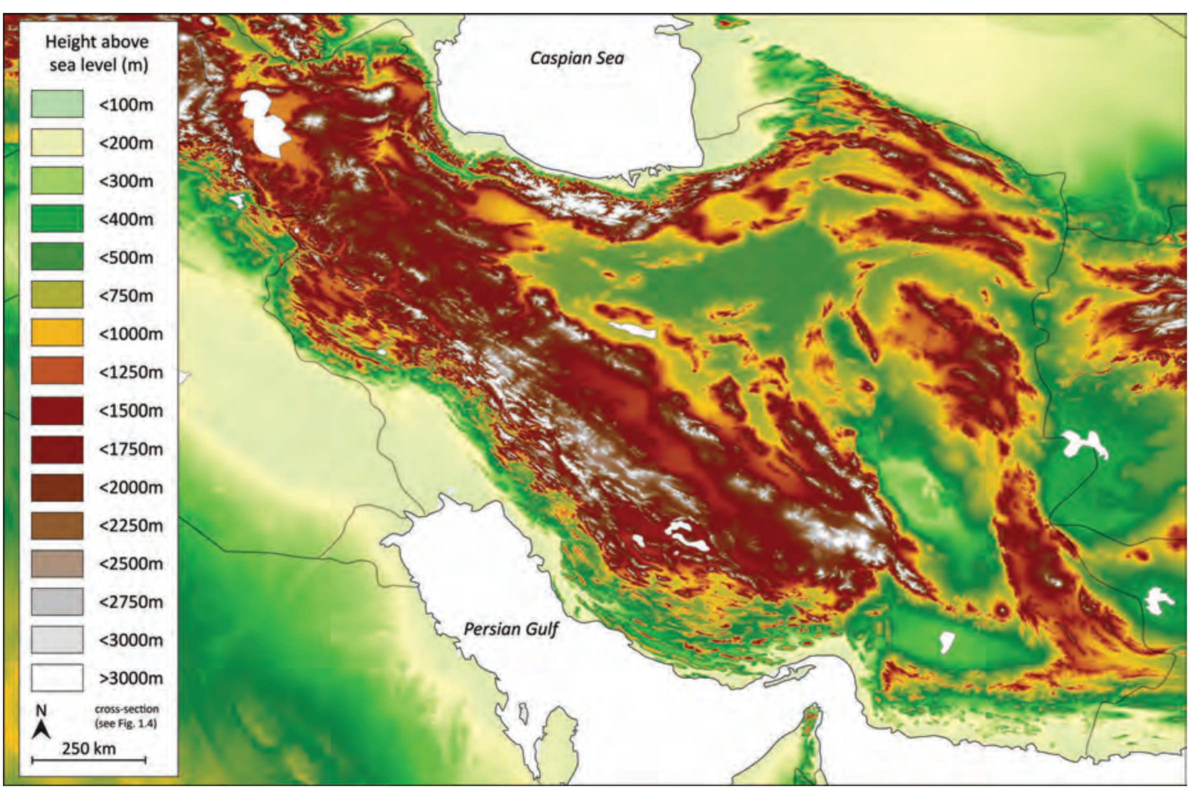

Figure 2.3 Topographic map of Iran.

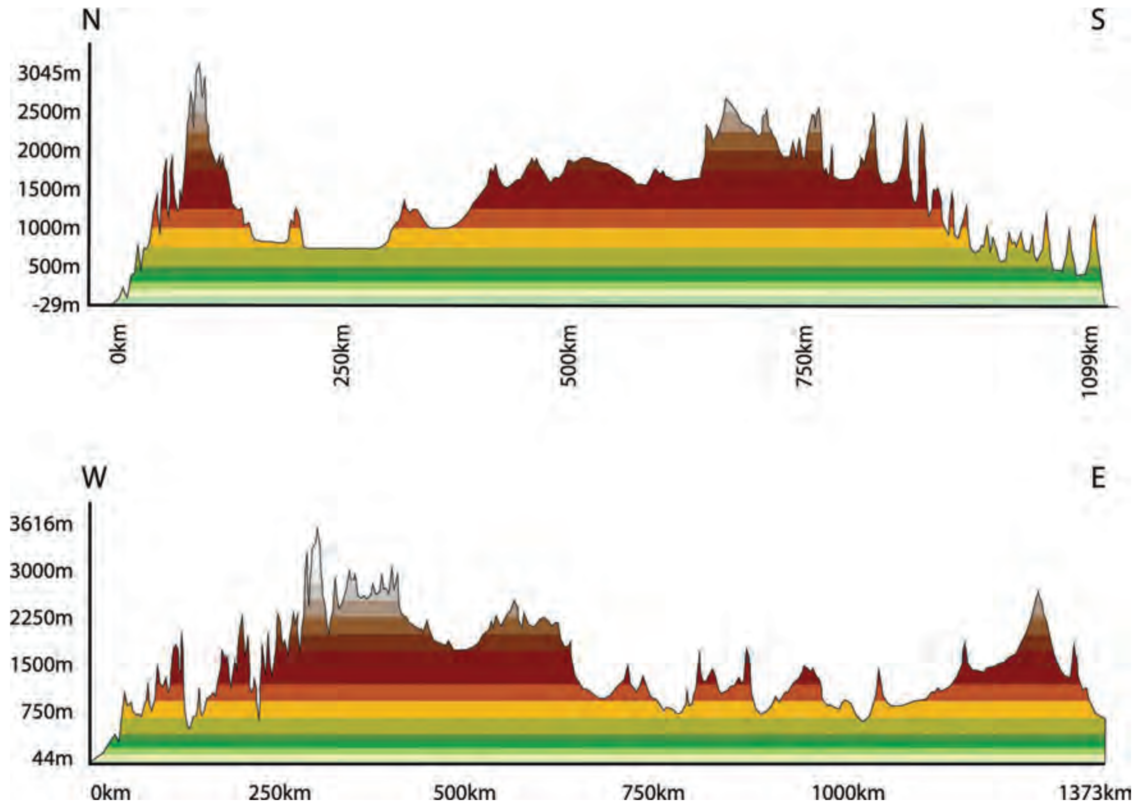

Figure 2.4 Cross-sections through Iran: N-S and E-W.

Table 2.1 shows the use of soils across Iran as recorded in 1968 (Dewan *et al.* 1968: 258). Also notable is the fact that many of the potentially productive soil regions are at high altitude and therefore prone to severe seasonal variations in temperature and rainfall, which can limit both the range of suitable crops and their productivity. The soil potential of the largest low-lying plain of Iran, the region of Khuzestan in the southwest, was intensively exploited for agricultural production in the Sasanian period, AD 224–651, but only by systematic manipulation of the water regime through barrages, canals and lifting devices (Adams 1962; Oberlander 1968: 275). Salinization of these soils, along with rising water tables, has foiled subsequent attempts to maximise the agricultural potential of this region. Khuzestan apart, Iran lacks the extensive spreads of alluvial soils that characterise the Mesopotamian flood plains to the west where irrigation enables double-cropping of cereals alongside produce such as dates (Hole 2011). The distribution of available soils and water resources across Iran has been critical in structuring human settlement (de Planhol and Brown 1968; Petrie 2013b: 6), to the extent that in terms of population distribution "Iran appears as an arid zone with green islets scattered over it" (Behnam 1968: 470). Iran's relatively limited capacity for production of staple crops such as grains is a critical factor in considering major issues such as the Neolithic transition to farmer-herder lifeways and the long-term sustainability of state-level political structures, as discussed throughout this book.

Highly significant also is the distinctive hydrography of Iran, concisely addressed in Oberlander's (1968: 279; see also Beaumont 1974, 1982, 1985; Spooner 1974; Vidale 2018b) few sentences: "On the whole, the hydrographic character of Iran does not serve the country well, since all its influences are centrifugal. Plentiful surface water and procurable subsurface water make large areas habitable; but these are widely separated, most of them lying around the periphery of the country, isolated one from the other by high mountains, empty deserts, or treacherous kavīrs, across which communications are extremely difficult. Unnavigable rivers and impassable gorges further hinder contact between adjacent populations." Iran's fragile freshwater resources are highly vulnerable to climate change and human impact, dramatically illustrated by an estimated 56% reduction in Iran's surface water over the 30 years up to 2015 (Pekel *et al.* 2016). The impact of water, and its frequent scarcity, on human communities of Iran through the ages is aptly summarised by Marjan Mashkour and Margareta Tengberg (2013: 189): "subsistence economies in this part of the world show at all times a high level of adaptation to specific environmental constraints, often linked to aridity."

By contrast, Iran is blessed with a wealth of minerals and materials, many of which have been cherished and exploited by the ancient inhabitants of Iran as well as by contemporary societies near and far. Significant materials include

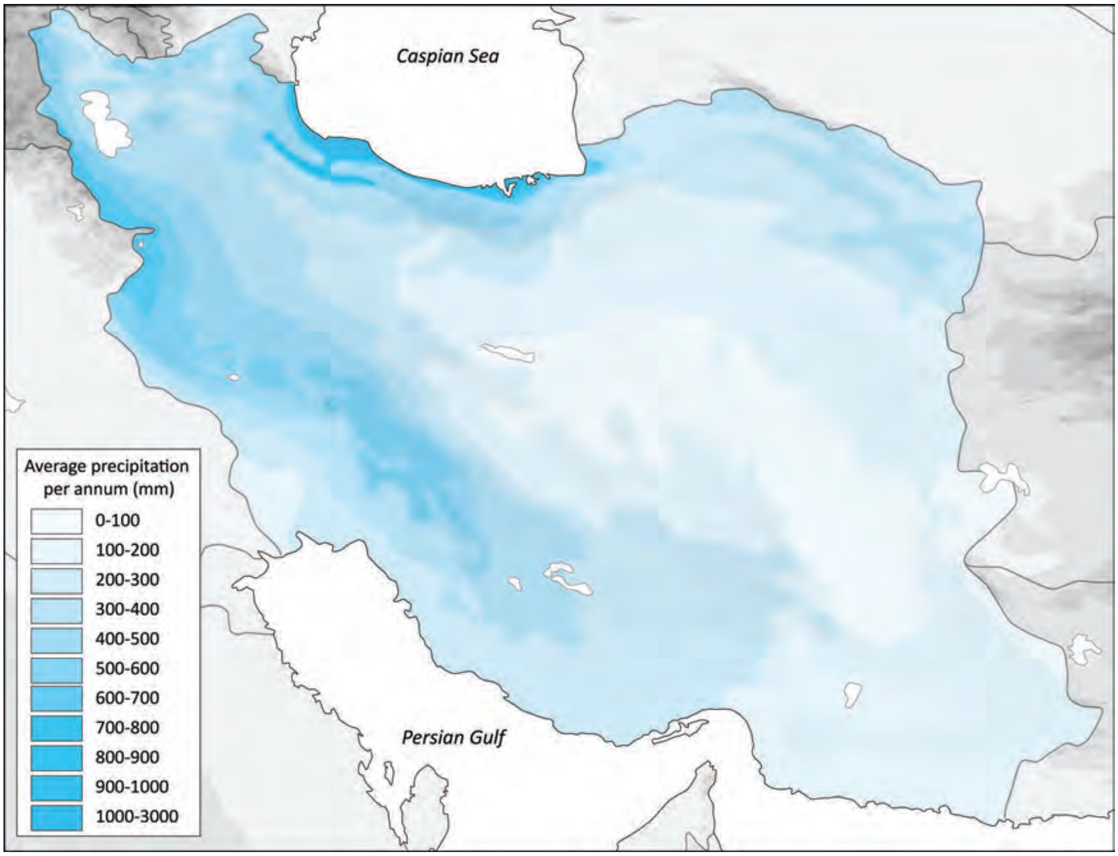

Figure 2.5 Annual precipitation of modern Iran (after Ganji 1968: fig. 80).

a vast range of timber (Wulff 1966; Potts 2016: Table 2.9), metals such as iron, copper, tin, lead and gold (Pleiner 1967; Momenzadeh 2004; Nezafati *et al.* 2006, 2008b: Table 1; Roustaei 2012b; Helwing 2018; Petrie *et al.* 2018: 107), valued and workable stones such as carnelian, turquoise, marble and chlorite, as well as extensive deposits of salt, bitumen and cobalt amongst many other minerals (Harrison 1968; Potts 2016: Table 2.6). The differential distribution of these desirable materials and commodities across Iran is a significant factor in structuring the historical development of human societies within Iran and their relations with neighbouring peoples, as we explore throughout the book.

The vegetation of Iran also shows immense variety (Zohary 1963, 1973; Bobek 1968; Frey and Probst 1986; Djamali *et al.* 2011a; Petrie *et al.* 2018: 105–107; Ghahremaninejad *et al.* 2021), with more than 8,200 species from a wide range of plant groups, distributed according to topography, climate and soil types across Iran. Miller (2003: 10–11) distinguishes five major vegetation zones of Iran (Table 2.2). Human impact on the vegetation regimes has been highly significant for at least the past 10,000 years, in particular through fuel-collecting, including charcoal-production, and grazing or over-grazing by herded animals (Bobek 1968: 281–282; Nemati 1977). These factors have hugely reduced and degraded both the woodland and the grassland cover of Iran. Broad categories of vegetation types in Iran comprise humid forest, semi-arid forest, steppe and desert with scattered brushwood, riparian forests and salt marsh brushwoods.

In line with Iran's richness in physical geography is its wealth of animal life. Iran hosts, or until recently hosted, no fewer than 168 species of mammal, nine of which are marine (Misonne 1968; Harrington 1977; Gilbert 2002: table 1.1; Firouz 2005: 47–48), as against 133 species across all of Europe, with 18% of those species endemic to Iran. Special mammals range from the Caspian tiger in northern Iran (almost certainly now extinct: Azarpay 2005; Firouz 2005: 66) to the plague-bearing gerbils of the Zagros. Some 500 bird species are found in Iran (Jervis Read 1968; Gilbert 2002: Table 1.2; Firouz 2005: 108), including permanent residents, summer visitors, winter visitors and passage migrants. For the archaeologist, identification of birds within these categories can be of major assistance in determining seasonality of occupation at excavated sites (Serjeantson 2009). Ancient exploitation of a wide range of Iran's fauna is attested in zooarchaeological remains recovered from sites across the country (partly summarised in Potts 1999: Tables 2.3–2.5).

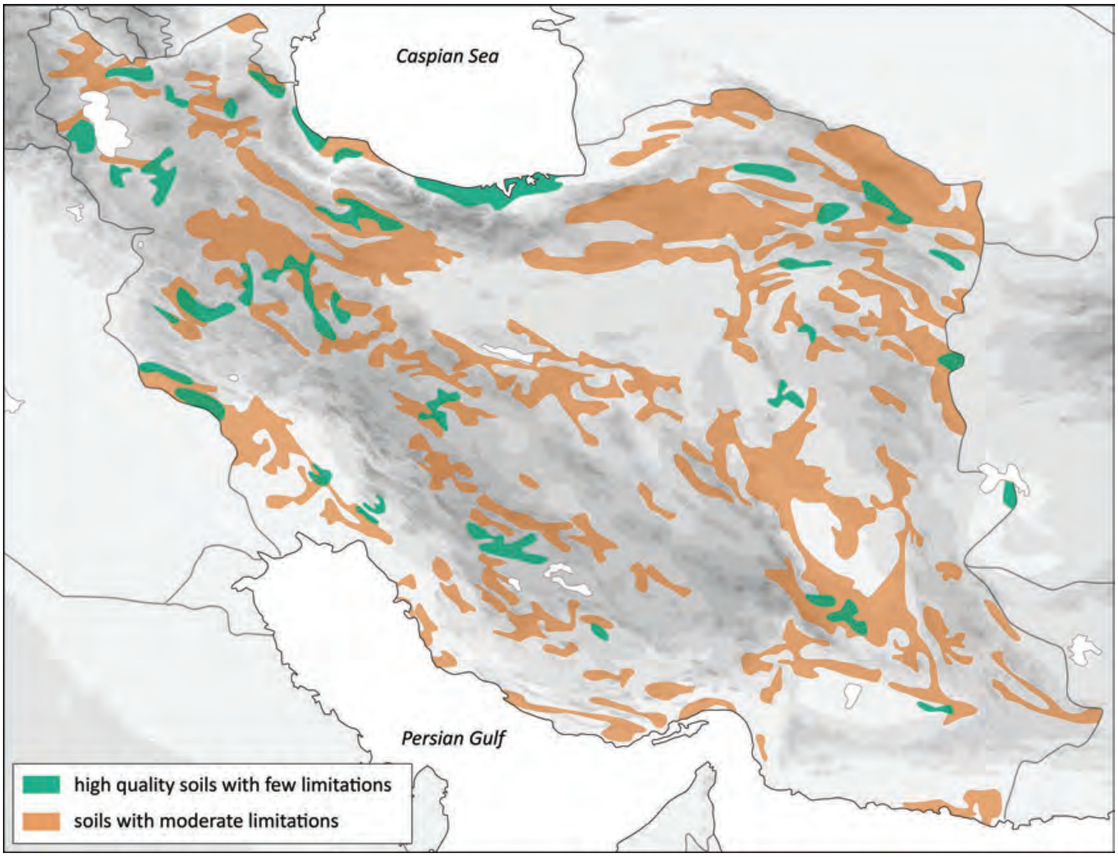

Figure 2.6 Arable soils of modern Iran (after Dewan *et al.* 1968: figs 84–85).

Table 2.1 Soil use in Iran in 1968 (data from Dewan *et al.* 1968: 258–259)

Soil usage	*Hectares*
Irrigated cultivation of crops (rice, sugar-beet, cotton, oil seeds, cereals)	2,300,000
Irrigated cultivation of vineyards and orchards	700,000
Unirrigated cultivation of crops and orchards	3,600,000
Fallow	12,400,000
Pastureland	10,000,000
Forest and woodland	19,000,000
Wasteland, desert, mountain	117,000,000
Total	**165,000,000**

Table 2.2 Vegetation zones of Iran (data largely from Miller 2003: 10–11)

Region	*Climate attributes*	*Characteristic vegetation features*
Caspian	High annual precipitation; mild winters	Thermophilous and temperate forest
Zagros	Westerlies bringing moisture from the Mediterranean; cold winters; hot summers	Xerophilous oak forest; pistachio-almond steppe-forest
Central plateau	Dry continental climate; low annual precipitation	Artemesia or Astragalus steppe; psammophilous and halophilous plants
Khorasan	Low-moderate annual precipitation	Primarily steppe or desert; juniper steppe-forest
Laro-Baluchistan	Dry continental climate; hot and dry	Primarily desert and steppe

The zones of Iran: contexts for human–environment interactions

The land of Iran can usefully be understood as an assemblage of major physiographic units (Figure 2.7): the Khuzestan lowlands, the Zagros mountains, the northern highlands, the eastern highlands and the central basins (Fisher 1968a). To some extent each of these regions has its own characteristics of climate, environment and ecology, determined above all by latitude and orography (Djamali *et al.* 2011a), as now discussed.

The Khuzestan lowlands

Situated adjacent to the Lower Mesopotamian plain of Iraq to the west, the Khuzestan lowlands comprise a triangular wedge of flat, low-lying land, bounded by the Tigris and Shatt al-Arab to the west, the coast of the head of the Persian Gulf to the south and the slopes of the Zagros to the east (Figure 2.8). At 28,500 km^2 in area, the Lower Khuzestan plain is the largest lowland region of Iran, formed of silts deposited by the Karun, Karkheh and associated rivers, all of which drain a total area of some 100,000 km^2 of the Zagros mountains, and are fed by annual rainfall in the high Zagros (Kirkby 1977: 251; Potts 1999: 15). The silt volume deposited by these rivers is truly phenomenal, with the Karun in its rush from the high Zagros bringing more than two-thirds of the 27 km^3 of annual water discharge into the Persian Gulf from the combined Euphrates, Tigris and Karun systems (Cressey 1958: 455; Potts 2016: 20). As with the Tigris and Euphrates in Lower Mesopotamia, the rivers of Khuzestan were also prone to abrupt shifts in course, or avulsions, which could have dramatic impacts on human communities living alongside the riverbanks (Moghaddam and Miri 2007; Woodbridge *et al.* 2016). The Khuzestan plain has been characterised as "a platform built out by the deposition of sediments eroded from the Zagros mountains, and hence an extension of the Iranian plateau" (Fisher 1968a: 33). It has also been viewed as a bridge connecting the Mesopotamian alluvium with the Iranian uplands (Wright 2013: 51), but we should keep in mind that the presence today and in the past of extensive marshes along the present Iran-Iraq border zone may well have served a role in shaping Khuzestan-Mesopotamia connections (Potts 2016: 21).

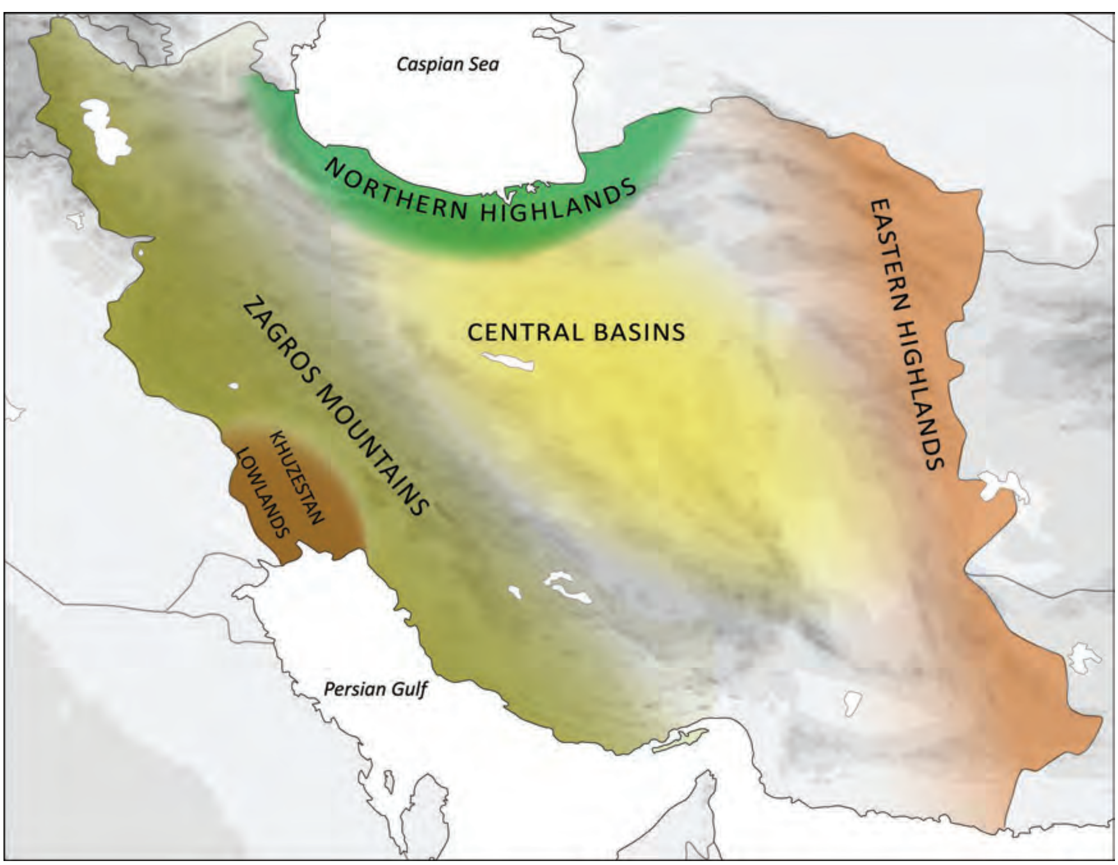

Figure 2.7 Major physiographic units of Iran.

Figure 2.8 View of Khuzestan landscape: the Zohreh plain (photo credit: Abbas Moghaddam).

It was previously believed that the massive levels of silt deposition in the Tigris/Euphrates/Karun delta were counter-balanced by down-warping of the underlying deposits due to the increasing weight of the sediments, thus maintaining a more or less stable position for the coastline at the head of the Persian Gulf (Lees and Falcon 1952; Fisher 1968a: 34; discussion in Potts 1997: 30–40). Later work suggested a transgression of the sea some 200 km inland, close to Ur and Eridu in southern Iraq (Geyer and Sanlaville 1996; Lambeck 1996). Based on evidence from Lower Khuzestan (Heyvaert and Baeteman 2007; Heyvaert *et al.* 2013; Bogemans *et al.* 2017), research now suggests that at *c.* 6000 BC the shore of the Persian Gulf extended at least 80 km inland from its present position in Khuzestan, with salt marshes and coastal *sabkha* developing rapidly thereafter and the current shore line being established from perhaps 500 BC. It now seems probable that a marine gulf did not extend as far north as Ur and Eridu at *c.* 6000 BC, but that the landscape of Lower Mesopotamia was marked by marshes, lagoons and inter-tidal flats (Pournelle 2007, 2013; Wilkinson 2012: 20). Certainly, during the Late Glacial Maximum (19,000–16,000 BC) with sea levels lower than today by 120–130 m, the Persian Gulf bed was dry land bisected by a massive extension of the Tigris-Euphrates complex, the Ur-Schatt River, which drained into an immense freshwater lake west of the Straits of Hormuz (Uchupi *et al.* 1999; Kennett and Kennett 2007; Rose 2010). This configuration has major implications for movement of Palaeolithic populations across Southwest Asia (Chapter 4; Dennell 2020). Inflow of the sea into the Persian Gulf during the Early Holocene was remarkably rapid, averaging 140 m per year (Kennett and Kennett 2007: 235–236; Wilkinson 2012: 20).

Levels of rainfall in lowland Khuzestan vary between 150 and 300 mm per year, while summer temperatures exceed 45°C (Ganji 1968; Kehl 2009). Saline marshes and desert scrub characterise much of the region in the south and west, while towards the Zagros flanks the soils are a little more fertile and the rainfall greater (Dewan *et al.* 1968). We include within this transitional lowland region the plains of Mehran, Deh Luran, Susiana, Ram Hormuz, Behbahan and Zohreh, together sometimes called Greater Susiana (Adams 1962; Hole and Flannery 1968; Carter 1971; Dittmann 1984, 1986a; Kouchoukos 1998; Moghaddam 2012a, 2012b; Alizadeh 2014), a distinctive ecotone where human communities could maximise the resources of major adjacent regions, including the lower plain, the Zagros slopes and the sea of the Persian Gulf. This area is where the major archaeological sites of the region are situated, including Susa, Chogha Mish, Chogha Zanbil and Haft Tappeh, the heartland of ancient Elam (Petrie *et al.* 2018). Across the lower and upper plains of Khuzestan there has been significant human impact with regard to manipulation of water courses and degradation of vegetation by humans with their crops and flocks of animals (Bobek 1968: 290; Johnson 1973: 21). Indeed, this region of Iran, with its searing hot summers, salty soils and meandering marshes necessitates significant human adaptation and innovation in order for its bounty to be reaped (Adams 1962). A major cherished resource of the region, exploited through time, is bitumen (Connan and Deschesne 1996).

The Zagros mountains

Formed by tectonic collision of the Eurasian and Iranian plates (Jackson and McKenzie 1984), the Zagros mountain chain is the most dominant topographic and biogeographic feature of all Iran, occupying almost half the total land area of the country (Figure 2.9). The range stretches up to 2,000 km from the Armenian border in the northwest to the Straits of Hormuz in the southeast, varying in width from 200–600 km (Minc 2016: 802–803; Potts 2016: 15–18; Balatti 2017). The highest peaks of the Zagros attain 4,500m in the central area but more commonly the high ridges are at *c.* 2,000–3,500 m. The chain is composed of multiple parallel ridges, mainly of Cretaceous and Tertiary limestones, and broadly aligned northwest-southeast. Although the western slopes of the central Zagros and its foothills reach across the modern border into Iraq in the region of Kurdistan, the range itself forms a formidable but not insurmountable western boundary to the country of Iran. At its eastern end, the range tends to be steep and severe with a rugged topography, caused by resistance to folding by the bulk of the Iranian plateau (Fisher 1968a: 17). In the more central stretches, bordering Iraq, the tectonic collision pressures have been less extreme and the system is characterised by more even parallel ranges with extensive high plains and foothills. The upper Zagros zone has karstic features including many caves, important for Palaeolithic evidence (Chapter 4). Geological resources include limestone, cherts, diorites, basalts, ochres and umbers (Ghazi and Hassanipak 1999) as well as bitumen (Connan 1999).

Figure 2.9 High Zagros landscape with cross-section through Zagros range. Arrow indicates location of Early Neolithic mound of Sheikh-e Abad (Chapter 5) (photo credit: Roger Matthews).

The central and northern reaches of the Zagros, where rainfall is high, are marked by a complex system of rivers, including the Seimarreh-Karkheh, that wend and cut their way through the mountains in often dramatic gorges before falling westwards into the Tigris region and the Persian Gulf (Harrison 1968). Lower rainfall in the southern Zagros means that there are fewer major streams here, and irrigation of fertile land is by *qanat* and other means. Route-ways through the Zagros are defined by the topography, the major one being the course of the modern road leading westwards from Hamadan through Kermanshah, Sar-e Pol-e Zahab and on to Khanaqin and Baghdad. The high central Zagros can also be accessed from the south via Ahvaz, Dezful and Khorramabad.

Not surprisingly given its massive extent, from latitude 39° in the northwest to latitude 27° in the southeast, the Zagros hosts a wide range of environments, including forests, high plains and pastures, high mountains, foothills, riverine valleys and lakes. Annual rainfall ranges from 400 to 1,000 mm, falling mainly in winter and spring (Ganji 1968). Winters are severe, with temperatures dropping to −25°C while summers are dry and hot, reaching over 40°C. Spring and autumn are short transitional seasons between long winters and summers. Forms of human adaptation and interaction with this variety of environments have been equally varied, but a recurrent historical feature has been an element of periodic mobility, or transhumance, in particular to take advantage of seasonally determined variability in vegetation regimes underpinned by water availability. Seasonal movements of people and their animals within the Zagros ranges, and their interaction with settled cultivators, is a key defining feature of historically attested Iranian societies, although its significance within the earliest societies of Iran is much debated (Chapter 6; Potts 2014; Balatti 2017). In 1968 it was estimated that up to 10% of Iran's total population of 20 million belonged to tribal groupings pursuing some form of nomadic lifestyle, principally in the Zagros region (Sunderland 1968: 635). Four zones of altitude feature in indigenous terminology of the southern Zagros range (Henkelman 2012: 932; Potts 2016: 22–23): *garmsir*, up to 900–1,300 m, a dry, warm zone suitable for date culture; *mo'tadel*, 1,300–2,000 m, a fertile, moderate zone for grape, fruit and vegetable growing; *sardsir*, 2,000–2,200 m, high, cold lands for summer pasture and some cereals; and *sarhadd*, 2,200–4,000 m, an Alpine zone suitable solely for summer pasture.

At the southeast end of the Zagros, to the east of modern Shiraz, the climate is notably warmer and drier, allowing cultivation of crops such as dates, millet and rice, but dependent on irrigation. On their southern faces, the Zagros mountains here plunge directly into the waters of the Persian Gulf. The lack of significant coastal plain and of natural harbours and river deltas along the entire coast between Bushehr and Bandar Abbas has made this region of Iran, with its plethora of dramatic salt plugs, quite remote where "the inhabitants live self-sufficient lives away from the country's main currents of activity" in Fisher's words (1968a: 30). The very end of the Zagros range, in the region of Bandar Abbas, is marked by a northwards swing in the coastline at the Straits of Hormuz. Here the sweep of the ranges away from the line of the coast provides greater opportunity for coastal settlement, as well as enabling easy communications both northwards by land into the interior of eastern Iran and southwards by sea from Minab across the narrow straits to Oman. Access to the sea from inland Iran at this point was critical in facilitating sea-borne trade between south-eastern Iran and Mesopotamia to the west.

The Zagros slopes today host extensive spreads of loose oak forest, with stands of scattered low trees interspersed with grassy steppe (Bobek 1968: 285; van Zeist 2008b; Petrie *et al.* 2018: 106). Varieties of oak grow alongside elm, maple, celtis, walnut, pear, pistachio and almond, with steppe-forest reaching the timberline at 1,800–2,000 m above sea level. The commonest oak of the region, and the most tolerant of low precipitation, *Quercus brantii* has evolved the ability to regenerate by producing root sprouts, which gives it some resilience against grazing (El-Moslimany 1986; Djamali *et al.* 2008). But analysis of pollen in a sediment core from Lake Zeribar in Kurdistan indicates that the spread of oak forest in this region of the Zagros did not succeed until into the fourth millennium BC, prior to which an *Artemisia* steppe dominated (Bobek 1968: 293). The Lake Zeribar core suggests the presence of scattered stands of oak, pistachio and maple in the period 46,000–36,000 BC, followed by an episode of tree disappearance due to severe climatic dryness during Pleniglacial times, accompanied by a fall in lake water levels (van Zeist and Bottema 1977; van Zeist 2008a; Kehl 2009; Jones *et al.* 2013).

From *c.* 10,000 BC, open woodland of pistachio spreads over the Zagros slopes, but the major development in the vegetation of the region is a transition from Late Pleistocene dwarf-shrub steppe to Early Holocene grass-dominated steppe, with the establishment of extensive oak woodland by *c.* 4000 BC. The oak woodland belt of the Zagros slopes, found at altitudes from 700 m to over 2,000 m, is dependent on rainfall of at least 500 mm per year (van Zeist 2008b: 26). Grazing by herded animals, above all goats, has seriously depleted the extent of Zagros slope forests throughout the Holocene (Pullar 1977: 18; Brookes 1982: 193). The rapid change to grassy steppe in the Early Holocene has been associated with a major climate shift, involving increased spring and summer rainfall as well as increased average temperatures (El-Moslimany 1987; Griffiths *et al.* 2001; W. Matthews 2013a). Against this argument, Stevens *et al.* (2001, 2008) propose that winter snow melt rather than spring/

summer rainfall may have supported the spread of grass steppe in the Early Holocene. Diatom evidence from the Zeribar core supports the idea of increased precipitation at this time (Witkowski *et al.* 2008: 186). The presence in the Lake Zeribar core of quantities of charred plant macrofossils in sediments from 46,000 BC onwards (Langer and Wasylikowa 2008) may be indicative of fires caused naturally by lightning strikes or by human activity in the vicinity of the lake.

The Zagros is home to a vast array of animal life (Firouz 2005; Potts 2016: 28–36), from wild boar to red deer, from wild goat to wolf, from endemic lizards (Anderson 1968) to flocks of visiting bee-eaters who announce the onset of spring with their chirruping call. As host to such biogeographic diversity in its landscapes, climate, flora and fauna, and forming as it does the eastern wing of the Fertile Crescent, the Zagros range is of fundamental significance to the development of human societies in Iran through the ages and as such will feature recurrently throughout this book.

The northern highlands

Iran's central northern border is marked by the world's largest inland water body, the Caspian Sea. Running parallel with its southern shore is the Alborz range of mountains, forming a crescent of high country between the Tehran and Qazvin plains to the south and the Caspian Sea to the north (Figure 2.10). Combined with the Talesh range in the northwest, the Alborz range is smaller in extent than the Zagros, covering a length of *c.* 800 km from Ardabil and the Aras river banks in the northwest to Jajarm in the northeast, and ranging from 70 to 120 km in width (Fisher 1968a: 38). But the range is extremely high, containing as it does the highest peak of Eurasia west of the Himalayas, Mount Damavand at 5,610 m. The northern slopes of the Alborz are especially severe as they rise almost directly from the Caspian Sea above a modest coastal plain, which lies below sea level. Beyond the western end of the Alborz-Talesh range, at their junction with the northern limits of the Zagros, lies the region of Iranian Azerbaijan with the saline Lake Urmia in its centre, a fertile and densely populated part of Iran (Danti 2013a: 2–11). Uncontrolled exploitation of the lake's waters, including construction of dams on the rivers feeding into it, have had a devastating impact on Lake Urmia, with at least an 80% reduction in its waters over the past few decades alone.

Figure 2.10 Alborz mountain landscape, Neshel, Mazandaran (photo credit: Hassan Fazeli Nashli).

The Alborz mountains receive very heavy rainfall, 1,950 mm per year at Rasht, which is five times the average for the country as a whole (Ganji 1968: 234; Khalili 1973), with less than 25% of this amount falling in the winter. The Caspian region, in other words, is generally wet year-round with almost daily summer rains and, along with high summer temperatures and lack of severe winter frosts (Ganji 1968: 227), these factors account for the lush vegetation that adorns its north-facing slopes, the so-called Hyrcanian forest (Bobek 1968: 284). A relic of the temperate forest that covered much of Europe and northern Asia in the Late Tertiary, the Hyrcanian forest is composed of dense growths of lime, ash, elm, walnut and maple, mixed with pomegranate, fern and thorny shrubs. At higher altitudes, beech, juniper and oak are dominant but much of the original forests has been cleared in historical and recent times for livestock grazing and fuel (Homami Totmaj *et al.* 2020). Within the high ranges there are narrow plains with fertile soils suitable for small-scale agriculture and orchards. Communications through the Alborz are affected by means of high passes to the north from the Tehran and Qazvin plains and a more circuitous route taken by the modern railway via Gorgan in the east (Fisher 1968a: 46). Drainage of the vast quantities of water falling on the Alborz is through numerous streams and the major rivers of the Sefid Rud and the Alamut.

The coastal plain of the Iranian Caspian Sea varies in width from 1 to 30 km, broadening to its greatest extent at the Turkmen lowlands between Gorgan and the Atrek river (Fisher 1968a: 48). The coast, which is currently emerging from a shrinking Caspian Sea (Chen *et al.* 2017), is marked by sand dunes, brackish lagoons, terraces and foothills. Over the longer term, the Caspian Sea has risen significantly since AD 500, by as much as 31 m (Wilkinson *et al.* 2013: 33–36). In the west, the region of Rasht includes the delta of the Sefid Rud and is subject to extremely humid conditions with luxuriant vegetation, with year-round cropping today of rice, cotton, sugar, tobacco and tea. The Mazandaran region, due north of Tehran, has a narrow coastal plain but is densely populated and intensively farmed (Behnam 1968: 470). The plain widens out again to the east and at Gorgan we are in "definitely much more of a transition zone towards Central Asian conditions" (Fisher 1968a: 52), with a semi-arid climate and steppe dotted with archaeological mounds. Here we are indeed on the fringes of the great Central Asian steppe, stretching for hundreds of kilometres to the northeast. Communications to and from Central Asia along the coastal plains of the southern Caspian Sea, leading westwards to the courses of the Kura and Aras rivers, and on even to the Black Sea and Anatolia, are hinted at by the distribution along this route of archaeological sites and materials ranging from Palaeolithic to Iron Age in date (Piller 2012c; Vahdati Nasab *et al.* 2013a).

The Alborz range is a distinctive feature of Iran's biogeography, hosting a wealth of plant and animal life, and home to a significant proportion of Iran's population today. Modes of living in this green upland environment have included animal husbandry and intensive agriculture, but the region is also critical as a route of communication and shipment of produce from the Caspian plains southwards to Tehran and beyond. The very location of Tehran, on the southern slopes of the Alborz range, is rooted in its role as a winter base for Qajar nomads, commanding the roads to the Caspian, to Qom, and to central Iran and Fars to the south (de Planhol and Brown 1968: 446). On these harsh slopes and plains along the southern Alborz fringes, traces of intensive cultivation by means of *qanat* and other forms of irrigation attest sporadic attempts to turn the semi-desert of the plateau into productive fields. Further northwest, on the Qazvin plain, fertile soils and good water sources have encouraged human settlement through prehistory and history, but with significant interruptions (Fazeli *et al.* 2005; Schmidt *et al.* 2011), in a zone spanning the limits of the north-west Zagros and the south-west Alborz ranges.

The eastern highlands

Turning our attention east of a north-south line drawn from Gorgan to Bandar Abbas, Iran's eastern zone is more of an irregular complex of physical and biogeographic features than the regions we have discussed so far (Fisher 1968a: 60–90). This area is characterised by scattered highland massifs, attaining well over 2,000 m in places, interrupted by elevated plains and basins over 1,000 m above sea level. The massifs broadly form an eastern rim to Iran, defining its borders with Turkmenistan, Afghanistan and Pakistan. While not as formidable in its topography as the Zagros and Alborz ranges, this region's arid climate renders difficult human and animal movement across the bleak terrain, isolating the Iranian interior zones to the west.

The Khorasan region of north-eastern Iran is marked by parallel mountain ridges, the outermost of which, the Kopet Dagh, straddles the border between Iran and Turkmenistan, with Ashgabat situated against its northern slopes (Vahdati 2018: Figure 1). The accessible passes here act as a gateway into Iran's interior, exploited by invading peoples from Central Asia through time. Attempts to control these incursions are most dramatically attested in the Sasanian Gorgan Wall that traverses the plain north of Gorgan (Sauer *et al.* 2013). The north-western reaches of these ranges benefit from precipitation derived from the Caspian Sea which supports relatively lush vegetation on the slopes, and the high plains and valleys are suitable for cropping and animal husbandry. The main line of communication, the modern road between Gorgan and Mashhad, partly follows the valley of the Atrek river as it heads towards the Caspian Sea. The inner ranges of mountains here form a high northern boundary to the central plateau. The modern Tehran–Mashhad road and the railway skirt the lower slopes and plain edge of this transitional zone, with pockets of arable land and pasture in the valleys to the north. *Qanat* and stream irrigation have enabled a degree of agricultural colonisation of the salty soils fringing the great plateau to the south, but this is not a territory capable of supporting large populations. The major town of the northeast, Mashhad, draws its importance both from its religious significance as the burial place of the 8th Shi'a Imam, 'Ali Reza, as well as its location on a node of natural route-ways into Central Asia, Afghanistan and to south-eastern Iran.

To the south of Mashhad as far as Zahedan, the topography of eastern Iran is mixed, with rugged hilly outcrops interspersed with often barren high plains with salty crusts, capable of supporting only thinly scattered human habitations, except in the more fertile valley of Birjand (Figure 2.11). Directly north of Zahedan the region of Sistan includes a large portion of the well-watered Helmand basin, much of which lies across the border in Afghanistan. The south-eastern region of Iran, Baluchistan, is composed mainly of highlands that connect the limits of the Zagros with the Makran range of Pakistan to the east (Shearman *et al.* 1976; Spooner 1988). Severe volcanic topography, high daytime temperatures, cold night-time temperatures, proneness to extreme winds and lack of rainfall all restrict the agricultural capability of this region to a few pockets (Ganji 1968: 219, 235), with some degree of seasonal transhumance also practiced. Overall, however, south-eastern Iran is thinly populated, largely because of the low levels of rainfall: "Extreme aridity is therefore the main problem of agriculture – even of existence – in Iran" (Behnam 1968: 470). One of the most significant areas is the Jaz Murian oasis, watered by the Halil Rud from the west and the Rud-e Bampur from the east. Settlement and cultivation occur along the Rud-e Bampur towards Iranshahr, assisted by *qanat* irrigation. The region of Jiroft, on the middle reaches of the Halil Rud, receives relatively high rainfall for this general area of Iran, due to the proximity of the high Jabal Bariz range to the west. Coupled with the good soils of the region, this attribute allows cultivation of a range of crops, including date-palm and winter cereals in an economy mixed with a degree of transhumance. The region has clearly supported significant levels of past human settlement (Majidzadeh and Pittman 2008; Gurjazkaite *et al.* 2018).

Figure 2.11 View of eastern Iran landscape, Baluchistan (photo credit: Hassan Fazeli Nashli).

The central basins

The central basins cover a vast region of Iran effectively surrounded by the mountain complexes discussed above, and with no drainage outlets to the sea (Gabriel 1938; Fisher 1968a: 90–110; Oberlander 1968: 276–278; Scharlau 1968: 191–193; Spooner 1994). They consist of elevated basins, 900–1,500 m asl and highly varied in extent, which together cover some 800,000 km^2 or approximately half the total land area of Iran. This region, one of the hottest on earth today (Mildrexler *et al.* 2006), suffers from extremely arid conditions, with less than 100mm rainfall per year across more than half of the region and significant evaporation from high summer temperatures, coupled with very low night-time and winter temperatures. These conditions, along with the high salinity of the soils, allow the development only of sparsely scattered *Artemisia* dwarf-shrub vegetation, with plant cover across the region estimated as being as low as 5% (Zohary 1973: 487; van Zeist 2008b: 28). In short, this is principally a desert region, characterised by spreads of sand dunes, seasonal salt lakes, and viscous slime or *kavir*.

In the north, the largest of these basins is the Dasht-e Kavir, covering *c.* 400 by 150 km, while less extensive salt basins reach to within a few kilometres of Tehran, Qom and Kashan. To the southeast, the Dasht-e Lut is a broadly oval spread of barren land between Kerman and Zahedan, ringed by high mountains on all sides except the northwest. Extensive complexes of sand dunes and salt lakes are dominant features in this forbidding, harsh landscape. The towns of Kerman and Bam sit along the western edge of the Dasht-e Lut, making use of more fertile lands and water sources to the west and south (Beckett and Gordon 1966). Further salt basins lie in parallel with ridges of the eastern Zagros, from Esfahan in the northwest to Sirjan in the southeast.

Routes of communication: the lay of the land and the sea

"Everywhere in Iran movement from north to south or from north-east to south-west is difficult, but at right angles along the grain of the country from north-west to south-east there is not much trouble, and each of the long basins is traversed by an important easy road" (Harrison 1942: 177).

The topography, climate and hydrology of Iran have sharply affected the course of routes of communication across its varied landscapes (T. Potts 1994: 36–43; Petrie *et al.* 2018: 108), to the extent that almost all of the route-ways described here, illustrated in Figure 2.12, are significant in all periods of Iran's past, and indeed remain so today. Routes of communication in south-western Iran would always include waterways as well as overland routes, which serve to connect the region with Lower Mesopotamia to the west. Thus, access from the south to the key site of Susa in Khuzestan would normally have been by boat. The extent to which the sea routes of the Persian Gulf were used appears to have been highly variable through prehistory and history, but the Iranian shores northwest of Bushehr offer some good harbours and the sea route following this shore eastwards provides access to the Oman peninsula and beyond to the Indus Valley. There is significant archaeological evidence for boats from Early Chalcolithic Ubaid-period and later sites in Lower Mesopotamia and along the southern shores of the Persian Gulf (Carter 2012). The Kerman region of south-eastern Iran has good access to the sea at Minab near the Strait of Hormuz, and it is likely that many of the connections between the Kerman region and Lower Mesopotamia (Chapter 9) were conducted via sea routes rather than traversing the harsh land terrain.

Major land routes into and across Iran naturally have to take account of such massive features as the Zagros mountains and the central deserts. Firstly, the so-called Great Khorasan Road traverses northern Iran, in the west providing access to Iran via the Diyala and through the Zagros gates to the region of modern Islamabad-e Gharb, and thence via Kermanshah and Hamadan onto the plateau and to the plains around Tehran. From Tehran the Great Khorasan Road reaches due east along the northern edge of the Dasht-e Kavir to Mashhad where the road divides into a range of options stretching northeast, east and southeast. This northern route-way is of fundamental significance in enabling movement of raw materials, artefacts, animals, people and ideas across the entirety of Iran through the ages but also, even more significantly, in connecting Iran with the broader world outside, including Turkmenistan and Central Asia to the east and Mesopotamia to the west. Many major archaeological sites are located within easy reach of the Great Khorasan Road, as we shall see throughout this book. This is the most important strand of what became known in later times as the Silk Road or Silk Roads (Frankopan 2015, 2019). To some extent parallel with this route, another way to travel from Central Asia westwards across Iran and on to the Caucasus and Anatolia, or vice versa, would have been to move along the northern flanks of the Kopet Dagh in Turkmenistan to the Gorgan plain at the south-eastern corner of the Caspian Sea. From there, one could travel westwards along the Caspian Sea littoral to reach the Kura and Aras (Araxes) rivers which provide access to southern Caucasia, the eastern Anatolian highlands, the Black Sea and beyond (Piller 2012c). Direct north-south access from the plains of central-northern Iran to the Caspian Sea littoral was restricted to natural passes, principally along the course of the Sefid Rud.

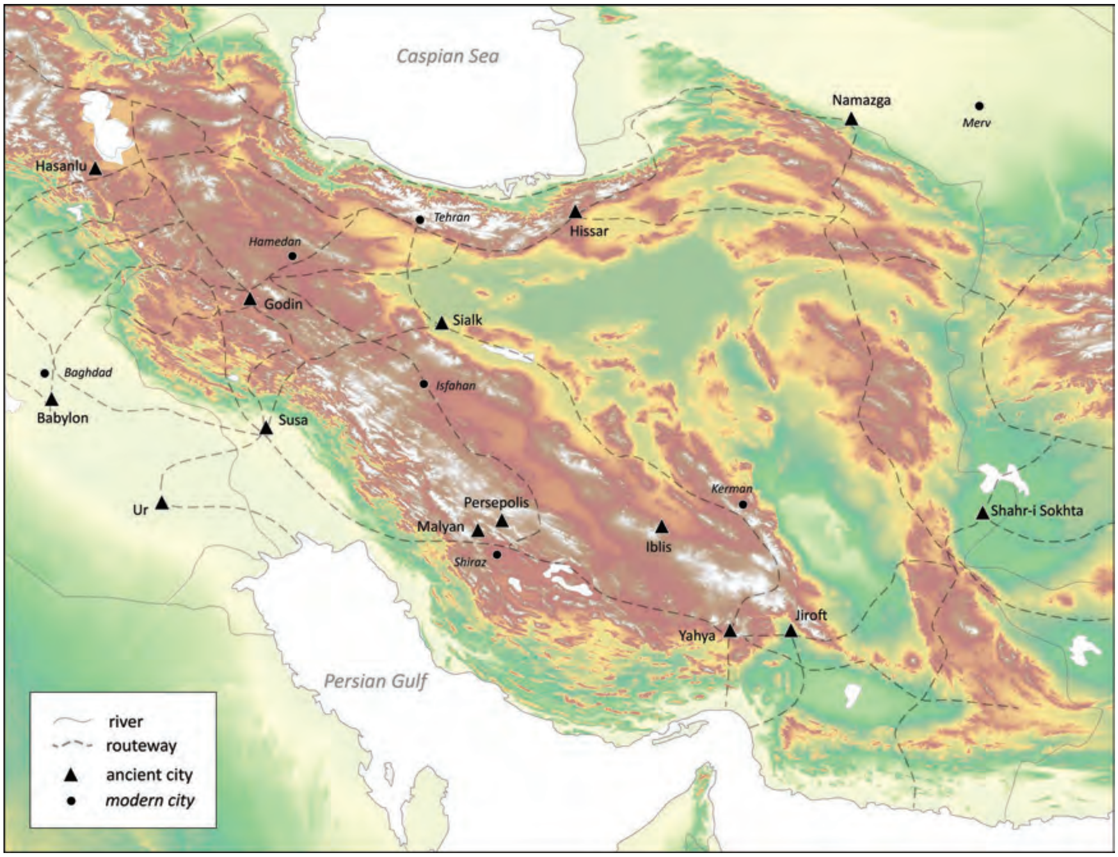

Figure 2.12 Major routeways of Iran, ancient and modern.

The second major east-west route across Iran is the so-called Achaemenid Royal Road running through the southern Zagros region of Fars to Anshan (Tal-e Malyan), the highland capital of Elam and a major settlement of the Proto-Elamite and other periods (Chapter 7). In the Achaemenid empire of the Iron Age (Chapter 11) this road connected Babylon and Susa in the west with Persepolis and Pasargadae in the east. Extending further east, the route gives access to all regions of south-eastern Iran and beyond to South Asia. A range of routes cross Iran in broadly north-west/south-east alignments, linking Susiana with Luristan, Kerman with Tehran, and Zahedan with Mashhad, for example. Key among these is the trans-Tigridian corridor (Renette 2013), the swathe of land between the Zagros mountains and the Tigris river in Iraq, connecting Susa and Khuzestan all the way to Nineveh via the plains of Deh Luran and Mehran and the lower reaches of the rivers Diyala, Adhaim, Lesser Zab and Greater Zab.

In the periods covered in this book, human movement along all these land routes would have been above all on foot, with donkeys as beasts of burden from the Chalcolithic period onwards (T. Potts 1994: 44–45). Camels do not feature as pack animals until the later second millennium BC, and wheeled vehicles would have been unsuited to most of the routes traversing the challenging terrain of Iran.

Climate, environment and human interactions: the challenge of Iran

In view of Iran's highly variable physical geography and biogeography, as we have seen, we need to consider the nature of interactions between human communities and the climate and environment of ancient Iran, from the Palaeolithic onwards. How did human communities cope with the many challenges presented to them by the harsh, topographically severe and seasonally extreme conditions of the land of Iran? In addressing this question, we may come to some significant insights regarding the special nature of Iranian societies, their resilience, hardiness and adaptability, generated through their recursive engagement with their physical surroundings, near and far. Human–environment interrelations form a major theme addressed through this book, but a few general comments are in order here. Firstly, we stress that establishing direct causal relationships between climate and human society is tempting but highly problematic, particularly when considering short-term fluctuations and adaptations (Hudson *et al.* 2012; Flohr *et al.* 2016; Jones *et al.* 2019; Carleton and Collard 2020).

Approaching the past climates and environments of Iran involves analysis of palaeoclimate proxy evidence available largely from lake bed and wetland cores, the most important of which are from the Caspian Sea (Leroy *et al.* 2014) and Lakes Almalou, Urmia, Neor, Zeribar, Mirabad, Maharlou, Parishan and Dasht-e Arjan, mainly in the western half of the country, as well as analysis of loess soil beds and occasional speleothem evidence from cave sites (Griffiths *et al.* 2001; Djamali *et al.* 2008, 2009b; Kehl 2009; Jones 2013; Jones *et al.* 2013, 2015; Ponel *et al.* 2013; Sharifi *et al.* 2015, 2018; Wang *et al.* 2017; Petrie *et al.* 2018; Aubert *et al.* 2019). While there is scope for much further research, the indications are that the climate of Iran, as experienced in each of its distinctive zones, has remained relatively stable but with significant oscillations over at least the past 6,000 years or so (van Zeist 1967; Brookes 1982; Brookes *et al.* 1982). The major climatic shift which impacts on Iran, as elsewhere in the region and beyond, is that brought about by the ending of the Pleniglacial and the onset of the Holocene from *c.* 9500 BC, often called the Climatic Optimum, which lasted from *c.* 9500 to *c.* 4000 BC (COHMAP 1988) and was characterised by warmer, wetter weather and attendant changes in vegetation regimes, including a spread of grasslands and woodlands (van Zeist 2008b; Kehl 2009; Roberts 2013). Within the context of this ameliorating climate, groups of humans dispersed across the increasingly fertile and attractive uplands of the Zagros in pursuit of herds of wild goat and sheep, while intensifying their exploitation of a range of animal and plant resources, leading in course to the full Neolithic transition (Chapter 5). At least some Neolithic societies of Southwest Asia appear to have been resilient to episodes of rapid climate change attested at *c.* 7200 BC and 6200 BC, including cooling and aridification (Flohr *et al.* 2016), although in other regions the human impact appears to have been greater (Weninger *et al.* 2009; Roffet-Salque *et al.* 2018).

In a bold synthesis, Sharifi *et al.* (2015: Figure 9) identify eight episodes of high aeolian dust input within the Holocene, detected in a peat core from Lake Neor in north-western Iran, which they correlate with times of drought, famine and socio-cultural transitions across Iran and neighbouring regions, including the collapses of the Akkadian empire at *c.* 2200 BC, of the Ur III state at *c.* 2000 BC, of the Elamite empire at 800 BC, of the Median state at 500 BC, and of the Achaemenid empire at 330 BC (Figure 11.3). Other palaeo-environmental studies in Iran provide supporting evidence for episodes of transregional aridification at *c.* 3200 BC and 2200 BC, which have been associated with the collapse of complex societies including the greater Uruk world at 3200 BC and the Akkadian empire and beyond at 2200 BC (Chapter 10; Staubwasser and Weiss 2006; Walker and Fattahi 2011; Leroy *et al.* 2014). The human–environment relationship worked both ways. Increases in aeolian dust input are likely to have been caused at least partly by intensified human and animal activity such as deforestation for agriculture and building, and excessive grazing by herds of goat and sheep leading to soil erosion and dust transport by wind (Kehl 2009: 12). A further factor to consider is the extent to which Late Pleistocene and Holocene erosion and sedimentation may have buried archaeological sites, especially small ones from prehistoric periods (Sharafi *et al.* 2016), an issue that needs to be borne in mind when reviewing diachronic settlement evidence from most regions of Iran. Further discussion of specific human–environment interrelations takes place at relevant points in the following chapters.

3 Approaching the past of Iran: a history of archaeological investigation

Approaching the past of Iran: key sources

In this chapter we trace the development of archaeological knowledge and understanding of Iran's past through its historical development. This process will serve both to situate the evolution of our knowledge in its historical context and to highlight how the discipline has recurrently been shaped by the research agendas of highly motivated individuals, Iranian and non-Iranian, with strong views on how to take their ideas and commitments forward, a productive dialectic between historical contingency and individual agency. The sources for the study of ancient Iran can broadly be termed archaeological and historical, with a strong reliance in this book on archaeological sources. For all periods predating *c.* 3000 BC Iran's past is prehistoric, and our knowledge of it is totally dependent on the material remains of societies and their environments recovered in a range of ways. Considerable variety through time and space in the ways that ancient societies of Iran have been, and continue to be, recovered is also a critical factor in constructing the sources. No excavation and no survey is free of a bias of some sort, and no field project recovers, let alone processes and publishes, 100% of available evidence. As in other regions of Southwest Asia and beyond, an increasingly sophisticated array of scientific approaches has been developed and applied in the context of archaeology in Iran, remodeling the contours of knowledge as the discipline has developed.

From *c.* 3000 BC, the practice of writing makes very sporadic appearances amongst the ancient societies of Iran, and we have surviving written documents from a range of sites and contexts. Written sources, especially from long-dead languages, require special skills in their reading, apprehension and interpretation. For archaeologists, a significant concern regarding the texts is to consider their ancient contexts: who wrote them, who was able to read them, what were the socio-political situations of their construction, use and disposal in the archaeological record? Throughout the relevant chapters in this book we attempt to integrate our text-based knowledge within a broad archaeological narrative that does not prioritise either written or nonwritten sources, but that views them all as valid sources of information about the past, all equally in need of critical appreciation. The development, uses and collapse of writing systems within Iran's past societies are in themselves important topics (Lamberg-Karlovsky 2003) that we examine in subsequent chapters.

The history of archaeology in and of Iran cannot be divorced from the socio-political contexts within which the discipline is always situated (Goode 2007; Hassanzadeh and Miri 2012; Taylor 2014). Socio-political factors have been critical in shaping the nature, extent and location of field projects, as well as in structuring research agendas and the extent to which projects have engaged with international colleagues, to mention a few examples. In tracing the development of the discipline, we need at the same time to delineate the socio-political trends, and such are the aims of the rest of this chapter. In the following pages we consider the development of the archaeology of Iran in a series of chronological phases. These phases are of course arbitrary divisions, but their use serves to highlight the major trends in the narrative while contextualising the details of the story.

Difficult birth and infancy of a discipline: 1800–1930

Early explorers and traders from Europe, such as Pietro della Valle in the early 17th century and Cornelius de Bruin in the early 18th century, provided accounts and drawings of some of the spectacular sites and monuments of Iran, Persepolis above all (Sancisi-Weerdenburg 1991; Floor 1994; Gurney 1994; Stronach 2011). Progress in approaching the sources of ancient Iran commenced with Georg Grotefend's identification in 1802 of the names of Achaemenid kings in the Old Persian inscriptions at Persepolis (Schmitt 2002), an achievement significantly augmented by Henry Rawlinson's decipherment in the 1830s–1840s of the Old Persian component of Darius the Great's trilingual Bisotun inscription near Kermanshah (Rawlinson 1847–1848; Larsen 1996; Daniels 2009). The

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great significance of the decipherment of languages written in cuneiform script was that it opened a new, indigenous door on the past of countries such as Iran and Iraq, where previously biblical and classical traditions, both originating mainly from outside those countries, had shaped scholarly appreciation of their histories.

The early development of archaeology in Iran went hand-in-hand with nascent Iranian nationalism in the Qajar period, in particular through the reign of Naser ad-Din Shah (1846–1896) (Abdi 2001a; Goode 2007). The basic tenet of Iranian nationalism was the notion of "Iran" as a place and a nation with a distinctive identity that predated the Arab invasions of the seventh century AD and the spread of Islam across Iran from the west. Features of this identity, propagated by intellectuals such as Fath'Ali Akhundzadeh (1812–1878) and Mirza Agha Khan Kirmani (1855–1889), included the idea that before the Arab invasion Iranians had been free from despotic rule and that Iranian culture had been subverted and oppressed by the cloak of Arab Islam (Goode 2007:131).

Unfortunately at this time, several archaeological sites, including Tepe Hissar in Damghan province of north-eastern Iran, were subjected to so-called *tala-shuyi* or "gold-washing," whereby running water was passed through archaeological deposits in order to recover objects of metal, clay and stone for collections of the Qajar elite (Abdi 2001a). Recovered items were housed in a special museum in one of the royal palaces in Tehran, which ultimately had the benefit of encouraging the foundation of the National Museum of Iran in Tehran in 1910 (Mousavi 2013b: 7).

Archaeological excavations in Iran began in the mid-19th century with a site that was to prove of unique and lasting significance – Susa in Khuzestan. The location of Susa or Shushan as it is called in the Book of the prophet Daniel was of considerable interest to biblical scholars (Dyson 1968; Dubovský 2018b). The British geologist William Kennett Loftus with Henry Churchill made a map of the site of Susa in 1850, of great importance as it is the only plan to show the site before its severe disfigurement by decades of large-scale digging and dumping (Figure 3.1). The first excavations at Susa, and indeed in Iran, were undertaken by Loftus between 1851 and 1853 (Loftus 1857; Curtis 1993, 2018; Mousavi 1996, 2013b; Benoit 2004; Chevalier 2013), just a few years after Austen Henry Layard, who had visited Susa in 1841, and Paul Emile Botta had made their astounding discoveries at the Assyrian capital cities of Khorsabad, Nimrud and Nineveh in northern Iraq (Larsen 1996). Having articulated part of the Achaemenid *apadana* or columned hall at Susa, Loftus returned to his excavations at Nineveh and Warka in Iraq. Inscriptions found at Susa by Loftus confirmed the site's identity as biblical Shushan (Dyson 1968; Potts 2018).

The Crimean War and other distractions kept European powers occupied for 30 years or so from 1853, so that there was minimal engagement by them with the past of Iran and other countries of the region during that time. To the incidental fact that Naser ad-Din Shah's physician, Dr Tholozan, was French (Abdi 2001a: 54) we can attribute the consequence that the archaeology of Iran came to be dominated by French antiquarians for a period of half a century from 1882 until the ratification of the Iranian Antiquities Law in 1930. Dr Tholozan's role in this episode was to persuade Naser ad-Din Shah to grant the Susa permit to Marcel and Jane Dieulafoy in 1882. Backed by the National Museums of France, they excavated at Susa from 1884 to 1886, exporting their finds to Paris where they stimulated much interest. Amongst their discoveries were an Achaemenid bull's-head capital and much of a glazed brick frieze depicting royal archers of Darius the Great, both now on display in the Louvre (Figure 11.139) (Dieulafoy 1893; Carter 1992; Chevalier 1992, 2013, 2018; Mousavi 1996; Stronach 1998; Cotty 2018).

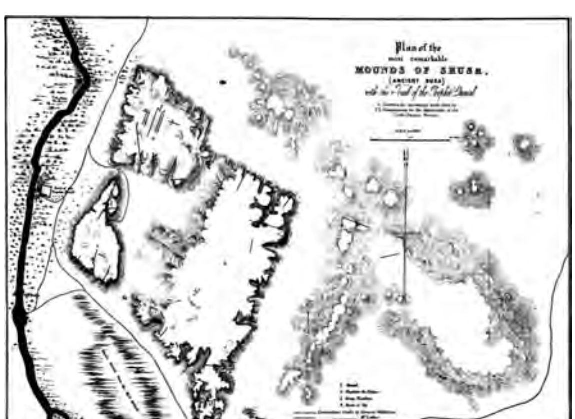

Figure 3.1 1851 plan of Susa by Henry Churchill and Willam Kennett Loftus (Loftus 1857).

On the basis of the Susa excavations, two remarkable conventions were agreed between Iran and France (Chevalier 2002, 2018; Goode 2007) the first of which, in 1895, granted France exclusive rights to excavate in any part of Iran. The second convention, signed in Paris in 1900, confirmed the French monopoly on excavations ("the government of his Imperial Majesty the Shah of Persia grants France exclusive and perpetual rights to excavate over the whole of the Persian Empire": Perrot 2013a: 49) and further stipulated that antiquities discovered in Susiana could go to France, with compensation paid to Iran for items of gold and silver, while objects found outside Susiana would be divided between Iran and France (Goode 2007: 127). Between the signing of these two extraordinary agreements, which were not universally well-received within Iran, a major development was the founding in 1897 of the *Délégation Scientifique Française en Perse*, directed from then until 1912 by Jacques de Morgan, who had already conducted an extensive geological, archaeological and ethnographic mission through the regions of the Caspian, Kurdistan, Luristan and Khuzestan in 1889–1891 (de Morgan 1895, 1896, 1900, 1902, 1912; Tissot 1994; Chevalier 2012: 66). De Morgan constructed the fort or *château* on the Acropole mound that even today dominates the Susa skyline, then a necessary protection against cross-border raids by local tribes (Figure 3.2) (Chevalier 1992: 18).

De Morgan's excavations at Susa were unsatisfactory even by the standards of the day, described as "industrial" by de Morgan himself and employing some 1200 workers (detailed discussion in Dyson 1968: 27–34; Young 1986a; Carter 1992: 24; Mousavi 1996: 6–14; Chevalier 2012: 68, 2013, 2018; Dahl 2019). De Morgan opened a trench on the Acropole mound measuring 100 × 40 m, digging in 5 m steps (Figure 3.3) (visible in a contemporary painting illustrated in Chevalier 1992: Figure 17), and keeping minimal records (Steve *et al.* 2002). By these means he intended to excavate 50,000 m^3 per year, thus aiming for total excavation of the Acropole mound in about 50 years (Mousavi 1996: 8)! In total between 1897 and 1905 de Morgan excavated at least 280,000 m^3 of deposits at Susa, inflicting incalculable damage to this unique repository of archaeological and historical evidence (Potts 2016: 327–328). Significant numbers of clay tablets inscribed in cuneiform script were recovered and their study and publication by the Assyriologist Jean-Vincent Scheil established the political entity of Elam as a major international protagonist of Bronze Age and Iron Age Southwest Asia, alongside Assyria and Babylonia (Álvarez-Mon *et al.* 2011: 4–5; Álvarez-Mon 2020: xxxvi–xxxviii). Tablets of so-called Proto-Elamite type were also recovered and still today form by far the largest assemblage of texts of that type, approximately 1,560 out of some 1,650 Proto-Elamite clay tablets in total (Chapter 7; Englund 2004: 143; Dahl 2019). Prime amongst de Morgan's finds were important Mesopotamian monuments that had clearly been taken from Babylonia to Susa as booty during Shatruk-Nahunte's campaign of 1158 BC, including the victory stele of Naram-Sin and the law code stele of Hammurabi of Babylon (Harper 1992). At the base of his massive trench de Morgan excavated a cemetery of fifth millennium BC date, comprising tombs with grave goods in the form of copper objects and finely painted pottery of Susa A type (Chapter 6). Results from the excavations began to be published in the series *Mémoires de la Délégation en Perse* (de Morgan 1900). Field direction of the excavations at Susa passed to Roland de Mecquenem from 1908, interrupted by the First World War (de Mecquenem 1980; Mousavi 1996: 14–15; Chevalier 2013). Just before the war, French excavations also took place at Hamadan (Ecbatana), Tepe Pisa just outside Hamadan, Rayy near Tehran and at Lian in Bushehr (Tissot 1994). In 1916 Aurel Stein entered Iran from the east and conducted the first excavations in Sistan (Stein 1928, 1937; Whitfield 2005).

Figure 3.2 Susa, the chateau with the Acropole mound behind and the tomb of Daniel to the right (photo credit: Loghman Ahmadzadeh).

Figure 3.3 The mound of Susa under excavation. Le Tell de Suse pendant les travaux. Oil painting by J.-G. Bondoux (1866–1919) (RF3690; photo: © RMN-Grand Palais, Musée du Louvre/Gérard Blot).

These developments in the archaeology of Iran need to be considered within the wider context of the evolution of the discipline, as well as in the light of technical advances during the later 19th and early 20th centuries. Contemporary excavations elsewhere in Southwest Asia, including those by Heinrich Schliemann at Troy and Ernest de Sarzec at Telloh, had begun to reveal traces of civilisations barely hinted at in either biblical or classical sources (Dyson 1968; Matthews 1997, 2011). While the work of Rawlinson and others had to some extent freed the study of the past of Southwest Asia from its biblical and classical constraints, it is an anachronism to consider any of the protagonists as professional archaeologists. Indeed, the work in Iran at least until well into the 20th century fell significantly behind the research and technical standards of the pioneering interdisciplinary programme of excavations as early as 1903–1904 led by the geologist Raphael Pumpelly at Anau in neighbouring Turkmenistan (Pumpelly 1905, 1908; Hiebert 2003). And the major advances in articulating and excavating architecture of unbaked mudbrick made by Robert Koldewey and Walter Andrae at Babylon and Assur in the late 19th century went unheeded by French archaeologists at Susa, for example, until after the Second World War. Nevertheless, the sequence of materials excavated at Susa, with their immense chronological span dating back to *c.* 4000 BC, was then unique in the region and provided the major reference points for dating pottery and other objects from Mesopotamian sites until well into the 1930s and beyond (Dyson 1997b: 61).

Significant political developments within Iran started to impact on the archaeological scene at this time, namely a resurgence of Iranian nationalism culminating in the 1921 *coup d'état* of Seyyed Zia ad-Din Tabataba'i and Reza Khan (later Reza Shah) (Goode 2007: 132; Imanpour 2015). In 1922 the Society for the Preservation of the National Heritage was founded in Tehran, with the stated goal "to enhance public interest in ancient knowledge, and crafts; and to preserve antiquities and handicrafts and their ancient techniques" (Mousavi 2013b: 7). The society aimed to build a museum and library in Tehran, to ensure the proper recording and registration of sites of heritage significance and to conduct the proper recording of antiquities held by government and national bodies. The founders of the society were especially active in publishing synthetic accounts of Iran's past, which served as key texts in the national curriculum between the two world wars and therefore helped to shape a sense of Iranian national identity. These books included Hasan Pirniya's *Ancient Iran*, *Myths of Ancient Iran*, and *History of Ancient Iran* and Mohammad-Ali Foroughi's *History of Iran* (Goode 2007: 153).

A natural outcome of the rise of Iranian nationalism and the ascendancy of Reza Shah was the abolition in 1927 of the French concessions of 1895 and 1900 (Goode 2007: 138). A national Conservation of Antiquities Act came into force in 1930, stipulating equal division of excavated finds between Iran and the partner country (Mousavi 2013b). The French were now restricted to Susa and would be overseen by an Iranian government representative. A new Department of Antiquities was formed and, in a conciliatory gesture to the French, André Godard was appointed its first director in 1929 and continued to hold senior positions in Iranian archaeology for over 20 years. His major achievements included a journal of Iranian archaeology and the building of the Iran Bastan Museum (Figure 3.4), architecturally modelled on the Sasanian palace at Ctesiphon in Iraq and officially opened by Reza Shah in 1937 (Goode 2007: 178–179). But the era of exclusive French control over the archaeology and heritage of Iran was over, and the door was open for wider international engagement.

Figure 3.4 Iran Bastan Museum, Tehran (photo courtesy of Jebrael Nokandeh, National Museum of Iran).

Internationalisation of a discipline: 1931–1958

The major development subsequent to the 1927 abrogation of the French concession was the internationalisation of archaeological activity in Iran. A towering figure in this process was the German archaeologist Ernst Herzfeld (1879–1948) (Gunter and Hauser 2005). Herzfeld had learnt about excavating in the Middle East through two years working with Walter Andrae at Assur in Iraq, and had travelled extensively in Iran and published major works on sites such as Pasargadae, Persepolis and Naqsh-e Rustam (Herzfeld 1929–1930b; Hauser 2003; Boucharlat 2005). Already in 1923 Herzfeld had conducted small-scale excavations at the Sasanian site of Paikuli in Iraqi Kurdistan as well as prospecting at Pasargadae. With the support of the Governor of Fars province, he was commissioned by Tehran in 1923 to produce a report on the archaeological site of Persepolis with a view to its excavation and preservation (Hauser 2003; Goode 2007: 142). Herzfeld's favoured status in Iran can be at least partly attributed to the publication in 1919 of his radical views to the effect that modern states of the Middle East could best protect their own heritage by establishing strong and active departments of activities, a notion well ahead of its time in the West (Hauser 2003). Much less attractive was Herzfeld's habit of illegally exporting and selling objects recovered from his own excavations (Muscarella 2012b, 2018). In 1925–1926 Herzfeld served as archaeological adviser to the Tehran government and assisted with drafting the Antiquities Law as well as compiling lists of national sites and monuments. Another major influence on Reza Shah's views on ancient Iran at this time was the American art historian Arthur Upham Pope. Reza Shah was encouraged by Pope's ideas to pursue an agenda of state support for and involvement in the recovery and curation of Iran's artistic and cultural heritage, broadly understood. Pope established the American Institute for Persian Art and Archaeology in New York in 1928 which supported expeditions to Iran, including Erich Schmidt's pioneering Holmes expeditions to Luristan in 1934–1935 and 1937–1938 (Schmidt *et al.* 1989). The Holmes expeditions were stimulated by the first appearance on the market of the so-called "Luristan bronzes" in 1928.

Herzfeld conducted the first excavations at Pasargadae in 1928 (Herzfeld 1929–1930a; Hauser 2003; Stronach 2005b), as well as briefly at the nearby prehistoric mound of Tall-e Bakun and at Kuh-i Khwaja in Sistan. Of lasting significance was Herzfeld's founding of the journals *Archäologische Mitteilungen aus Iran* in 1929 and *Iranische Denkmäler* in 1932. But Herzfeld's heartfelt desire was to excavate at the great Achaemenid site of Persepolis and eventually his wish was granted by the Iranian authorities. The financial crisis in Europe, however, meant that no German institution could afford to support him and so he turned to the Oriental Institute of the University of Chicago, under its director James H. Breasted, who appointed Herzfeld director of the Persepolis excavations from 1931 (Goode 2007: 146).

Persepolis had already attracted significant antiquarian attention, unsurprisingly in view of its spectacular above-ground remains (Mousavi 2002, 2012). In 1772 Carsten Niebuhr cleared part of the Apadana Hall stairway in order to sketch the reliefs, and in 1821 the site was first illustrated in water colour by Robert Kerr Porter (Dyson 1997b: 60). During a visit to Persepolis in 1811 by the then British Ambassador to Persia, Sir Gore Ouseley and his colleagues, a number of substantial fragments of relief sculpture were removed from the site for private collections in Britain, eventually forming the heart of the British Museum's collection of Achaemenid relief sculpture (Barnett 1957; Curtis 1998; Mitchell 2000). The French architect Pascal Coste and painter Eugène Flandin stayed at Persepolis for two months in 1840–1841, digging a number of soundings into the ruins

(Chevalier 2012: 65). A few decades later the superb photographic record of Persian sites, including Persepolis, were published by Franz Stolze (1882). Portrayal of Persepolis, and other sites in Iran, reached its culmination in Erich Schmidt's (1940) pioneering volume of aerial photographs taken from Schmidt's biplane *Friend of Iran* in aerial surveys in 1935–1937.

Herzfeld's excavations at Persepolis between 1931 and 1934 set the scene for a modern understanding of Achaemenid archaeology (Chapter 11; von Gall 2003; Mousavi 2005a, 2013b). He investigated the major buildings on the monumental platform, and his interpretation of the function of these structures has persisted until today through retention of his nomenclature. Using architectural features, foundation inscriptions and occasionally pure guesswork, Herzfeld labelled the various buildings with interpretive names such as "Apadana," "Tripylon Gate," "Hall of 100 Columns," "Harem," "Palace of Darius," "Palace of Xerxes," "Treasury" and "Gate of All Nations," thus constructing a narrative of how the site of Persepolis might have been used by the Achaemenid royal family. Recent studies have questioned the validity of these terms and thereby the whole interpretation of the site's function (Razmjou 2010), but it is striking that Herzfeld's architectural terminology of Persepolis has survived for so long. Also of enduring significance from Herzfeld's work at Persepolis was the discovery in 1934–1935 of the so-called Fortification Archive, a collection of some 30,000 clay tablets inscribed in Elamite found in the fortification wall at the northeast end of the platform, of major importance for approaching social, economic and administrative aspects of the empire (Hallock 1969).

Other American engagement in these years included three expeditions sponsored by the University Museum of the University of Pennsylvania: 1931–1932 excavations by Frederik Wulsin at Tureng Tepe (Olson and Thornton 2021), 1931–1932 excavations by Erich Schmidt at Tepe Hissar (Schmidt 1937) and 1934–1936 excavations at Cheshmeh 'Ali near Rayy, also by Schmidt (for Schmidt's photographs of these campaigns see Gürsan-Salzmann 2007). Schmidt, "one of the last excavators of the heroic age in archaeology" (Schmidt *et al.* 1989: xv), succeeded Herzfeld as director of the Persepolis excavations from 1934 until 1939 (Schmidt 1953, 1957, 1970; Stronach 1986, 1998; Goode 2007: 167). The Oriental Institute additionally sponsored excavations at the prehistoric site of Tall-e Bakun, near Persepolis in 1932 and 1937, directed by Alexander Langsdorff and Donald McCown (Alizadeh 2006), while a Swedish team under T. J. Arne excavated at Shah Tepe near the Caspian Sea (Arne 1945). Aurel Stein returned to Iran in the 1930s to conduct surveys and excavations across southern and western Iran (Stein 1940).

Through the changing political environment, de Mecquenem continued excavating at Susa from 1920 to 1938, revealing levels of late prehistoric, Elamite and Achaemenid date but failing still adequately to identify and trace mudbrick buildings (Carter 1992: 22; Tissot 1994). In the late 1930s he expanded his work to take in the ziggurat at Chogha Zanbil while his assistant Louis Le Breton surveyed prehistoric sites in Susiana. At the same time Georges Contenau and Roman Ghirshman excavated on behalf of the Louvre at Tepe Giyan in eastern Luristan and at Tepe Sialk near Kashan (Ghirshman 1939; Tissot 1994; Spycket 1997; Mousavi 2013b: 8; Bridey and Cuny 2019a, 2019b; Curtis 2019b). Ghirshman's excavations at Tepe Sialk (Figure 3.5) and Schmidt's at Tepe Hissar have been seen as "models at the time for the stratigraphic recovery of regional prehistoric sequences" (Dyson 1997b: 61), and they remain of fundamental importance for understanding the prehistory of the Iranian plateau.

Figure 3.5 Excavations in 1934 at the South Mound of Tepe Sialk, Kashan (Bridey and Cuny 2019a: 47–48; Ghirshman Archive, Department of Near Eastern Antiquities, Musée du Louvre. Inv. no DAO-600–004–0132).

Nevertheless, the general standard of excavation in Iran through the 1930s was poor (Young 1986a), and much of the material and data recovered at the time remain frustrating and tantalising to work with. Throughout the 1940s–1950s the practice of issuing commercial digging permits in Iran was widespread, in theory with all finds divided 50–50 between the state and the excavator, but in practice often with falsified records enabling retention and illicit export and sale of all finds, a sad practice gradually brought to an end following governmental inspection of the Archaeological Service of Iran (Negahban 2002).

An event of long-term significance was the opening of the Department of Archaeology at the University of Tehran in 1937, which rapidly became associated with proponents of Iranian nationalism (Abdi 2001a: 62; Malek Shahmirzadeh 2004). In 1941, one of its first graduates, Fereydoun Tavalli, excavated at sites on the Marv Dasht in Fars (Mousavi 2013b: 10). With the outbreak of the Second World War foreign expeditions ceased work in Iran, while excavations continued at Persepolis under the direction of a succession of Iranian archaeologists led by Hosein Ravanbod (Stronach 1998). Following the end of the war, French excavations resumed at Susa from 1946, directed until 1967 by Roman Ghirshman, who had been highly active in Iran before the war (Ghirshman 1952, 1953, 1954b, 1964; Le Breton 1957; Chevalier 2018). Interested in the arrival of Indo-Iranian peoples into Iran, he excavated in the northern sector of the Ville Royale and in the so-called Ville des Artisans in search of Achaemenid origins (Carter 1992: 22). From 1951 to 1962 Ghirshman moved his attention to the site of Chogha Zanbil 50 km southeast from Susa, concentrating on the massive Middle Elamite ziggurat of king Untash-Napirisha (Chapter 10; Carter 1992: 23). Back at Susa, Ghirshman's later campaigns exposed areas of architecture principally of second millennium BC date.

Under the tutelage of Henri Frankfort at the Oriental Institute in Chicago, the 1940s saw the first systematic attempts to correlate the stratigraphy of excavated sites across Iran and into Mesopotamia (McCown 1942, 1954), relying heavily on the sequences excavated at Sialk, Hissar, Giyan and later augmented by renewed study of the Susa sequence by Louis Le Breton (1957). From the Mesopotamian side these efforts were well-matched by the comparative stratigraphic study of Anne Perkins (1949). These two graduate seminar studies even today shape much of the relative chronology of both Iran and Mesopotamia, with much subsequent refinement. The quantity and geographic spread of excavations in Iran gathered pace through the late 1940s and into subsequent decades. On behalf of the Office of Archaeology, 'Ali Sami carried out excavations and restoration at Pasargadae and Persepolis (Stronach 1998), while Mahmoud Rad and 'Ali Hakemi began investigations at Hasanlu in north-western Iran, following Aurel Stein's earlier dig at the site, as well as excavating Iron Age graves at Khorvin in Alborz province in 1950 (Mousavi 2013b: 10). Donald McCown of Chicago excavated at the Proto-Elamite mound of Tall-e Ghazir on the Ram Hormuz plain in Khuzestan in 1948–1949, T. Burton Brown of Manchester dug at Geoy Tepe near Urmia in 1948, and Carleton S. Coon from Pennsylvania commenced Palaeolithic studies in Iran through excavation of cave sites in the Zagros and Caspian Sea regions from 1949 (Coon 1951; Stronach 1998). Louis Vanden Berghe of Ghent University had a major impact on the development of Iranian archaeology (Haerinck 2009). His surveys and test excavations at multiple sites in Fars and Luristan since 1951 established a tentative chronology for these regions from the Neolithic to the Iron Age (Stronach 1998). Japanese archaeologists Namio Egami and Seiichi Masuda began a long association of Japan with Iran's ancient past through their excavations at Tall-e Bakun in Fars in 1956. In western Azerbaijan, the Hasanlu Project, directed by Robert H. Dyson, Jr., of the University Museum of the University of Pennsylvania, began in the same year (Dyson 1997a).

A golden age of Iranian archaeology: 1959–1979

Several major episodes mark 1959–1961 out as pivotal years in the archaeology of Iran, the start of what we may regard as a golden age, a coming of age (Stronach 1998), "an explosive phase" (Young 1986a) or "the beginning of the modern era in Iranian archaeology" (Abdi 2001a: 65). Firstly, the year 1959 was graced by the publication of Louis Vanden Berghe's seminal volume *L'archéologie de l'Iran ancien* (1959), a worthy companion to the previously issued books by Ghirshman, *L'Iran des origins à l'Islam* (Ghirshman 1951; English edition 1954a), and Herzfeld, *Iran in the Ancient East* (1941). Secondly, under H. H. von der Osten and R. Naumann, a long-term German project at the Sasanian site of Takht-i Suleiman from 1959 brought sophisticated field and recording techniques into Iran (Stronach 1998). Thirdly, the Hasanlu Project, begun in 1956, became in 1959 a joint enterprise between the University of Pennsylvania and the New York Metropolitan Museum of Art and innovatively expanded to include regional studies and excavations at nearby sites such as Hajji Firuz, Dalma, Pisdeli and Dinkha (Dyson 1997a: 480), thereby introducing a host of talented young American and Canadian researchers to the discipline, including Mary Voigt, Oscar White Muscarella, Harvey Weiss, Irene Winter and T. Cuyler Young, Jr.

Fourthly, the 1958 revolution in Iraq had terminated the Iraq-Jarmo Project, directed by Robert Braidwood of the Oriental Institute of the University of Chicago. Braidwood had set an ambitious, anthropological agenda:

"The expedition described here is different [from previous excavations in the Near East] in that it is working toward the solution of a general problem: How are we to understand those great changes in mankind's way of life which attended the first appearance of the settled village-farming community?" (Braidwood and Howe 1960: 1). With the transfer of his fieldwork and research interests across the border into Iranian Kurdistan in 1959–1960, Braidwood brought with him the novel approaches of problem-oriented archaeology executed by a team of specialists in the natural sciences (Hole 1995: 2718; Matthews 2003a: 24–25), excavating at Neolithic sites in the Kermanshah region, including Asiab and Sarab (Braidwood *et al.* 1961). Another brilliant American introduced to Iran at this time was Robert McC. Adams, also of the Oriental Institute, who had already conducted a new form of multi-period survey and analysis in the Diyala region across the border in Iraq (Adams 1965; Abdi 2005). Adams applied his pioneering approach to the Susiana plain in 1960–1961, publishing the results as a characteristically insightful blend of geography, archaeology and history (Adams 1962). Following on from Adams, multiple archaeological surveys were undertaken in Iran, with a focus on the Khuzestan and Zagros regions (Young 1986a: Table 2).

A visionary and hugely influential figure in Iranian archaeology in the years from 1960 onwards was the Iranian archaeologist, Ezat Negahban, who had studied at the Oriental Institute in Chicago and thereafter assumed positions as the first Technical Director of the Iranian Archaeological Service, 1960–1965, and lecturer at the University of Tehran, where he established the Institute of Archaeology (Stronach 2009; Mousavi 2013b: 11). He was also Director of the Iran Bastan Museum, 1966–1968. Often called the Father of Modern Iranian Archaeology, he directed excavations at the Iron Age cemetery of Marlik and, from 1965 to 1978, turned his attention to the Elamite site of Haft Tappeh (Chapter 10), as well as investigating multiple sites on the Qazvin plain, including Zagheh, Ghabrestan and Sagzabad. He played a key role in encouraging and enabling American and international involvement in the archaeology of Iran through the 1960s and 1970s, aided by the convening of an annual International Congress on Iranian Art and Archaeology (Porada 1969). Perhaps Negahban's greatest achievement lay "in building the infrastructure of an indigenous archaeology apparatus" in Iran (Abdi 2013), through creation of a university curriculum in archaeology supported by all relevant facilities such as libraries, textbooks and in-field training. The creation in 1972 of the Iranian Centre for Archaeological Research, directed by Firouz Bagherzadeh (Malek Shahmirzadeh 2004; Aryamanesh 2019), set the seal on the maturity of archaeology in Iran, demonstrated through annual conferences where excavators produced their previous seasons' results, a model since adopted by many other countries.

Supported by grants from the American National Science Foundation, in contrast to the museum-based support for European activity, more American engagement in the archaeology of Iran in these active years came in the form of graduate students from the Oriental Institute of the University of Chicago and elsewhere, including Frank Hole, Kent Flannery, Gregory Johnson, Patty Jo Watson, Henry Wright and Charles Redman, all of whom were to make significant contributions to the study of ancient Iran, in particular opening up the discipline to the methods and approaches being developed in the so-called New Archaeology (Abdi 2001a: 66, 2005). Hole and Flannery's Prehistory of Southwestern Iran Project involved systematic excavation in 1961, 1963 and 1969 at several sites on the Deh Luran plain in Khuzestan, including Ali Kosh, Tepe Sabz and Chagha Sefid (Hole and Flannery 1968; Hole *et al.* 1969; Johnson 1973; Wright and Johnson 1975; Hole 1977; Wright 1981; Neely and Wright 1994; Moghaddam 2012a: 3–7, 2012b: 516–519). Hole and Flannery's project, boldly framed as an exercise in "human ecology," involved the first use of water flotation to recover charred plant remains (Helbaek 1969; Hole 1995: 2718; Miller 2003), a development that provided samples for the new technique of radiocarbon dating as well as insights into ancient food procurement practices. The surveys of the Susiana plain by Adams (1962) and their subsequent publication established a paradigm for the conduct and interpretation of multi-period surveys on the alluvial plains of Lower Mesopotamia and southwest Iran (Kouchoukos 1998). Further advances in scientific archaeology include the systematic study of ancient technologies, epitomised in the Wertime Pyrotechnological Expedition of 1968, which set out to investigate the early stages of Old World metallurgy at sites of ancient mining and craft production in Turkey, Iran and Afghanistan (Wertime 1968; Arab and Rehren 2004).

The year 1961 saw the start of a long-term involvement by the Chicago Oriental Institute in excavations at Chogha Mish in Khuzestan as well as at the nearby sites of Chogha Bonut and Boneh Fazili. Directed by Pinhas Delougaz and Helene J. Kantor from 1961–1978, the project focused on the so-called Proto-Literate period but also investigated much earlier levels, the whole project published in exemplary manner largely through the efforts of Abbas Alizadeh (Delougaz *et al.* 1996; Alizadeh 2003a, 2008). A major programme of survey and excavations in Kerman province, focused on the multi-period site of Tepe Yahya, started in 1967 under the leadership of Karl Lamberg-Karlovsky of Harvard University (Lamberg-Karlovsky 1968). Around the same time, significant steps in the development of Palaeolithic archaeology in Iran were well underway (Chapter 4; Vahdati Nasab 2011; Conard *et al.* 2013a).

A further methodological innovation developed at this time was that of ethnoarchaeology, defined as the study of "contemporary peoples for insights into prehistoric life" (Hole 1995: 2721). Hole himself carried out ethnoarchaeological study of Luri pastoral nomads (Hole 1979; Hole and Amanolahi-Baharvand 2021). Earlier, in 1959–1960, Patty Jo Watson had conducted the first such research by systematically investigating architecture, material culture and social organisation in a small village in Iranian Kurdistan, as a component of Braidwood's project in Kermanshah (Watson 1979), expanded on by Carol Kramer in later work (Kramer 1982). These studies should be viewed within an already established tradition of social anthropological research into nomadic peoples of the Zagros region of Iran, including the Kurds, the Bakhtiyari, the Basseri and the Qashqa'i (Barth 1953, 1965; Bacon 1954; Digard 1981; Beck 1983, 2003; I. Mortensen 1993).

The winds of change eventually arrived at Susa with the accession in 1967 of the prehistorian Jean Perrot who, in collaboration with Firouz Bagherzadeh, director of the Iranian Centre for Archaeological Research, and the University of Tehran, assembled an international interdisciplinary team to begin to do justice to the site (Steve and Gasche 1971, 1990; Le Brun 1978; Carter 1992: 23–24; Tissot 1994; Perrot 2013b, 2013c; Chevalier 2018) and its regional context (Dollfus 1978, 1985). Under their guidance, stratigraphically controlled excavations and cleaning operations in old and new trenches began to establish a more secure chronology of occupation at Susa and at surrounding sites such as Jaffarabad, Jowi and Bandebal (Dollfus 1978). Meanwhile, in 1969, the system of dividing excavated finds between host country and foreign partner was at last brought to an end, in line with policies adopted in other countries of the region and beyond (Stronach 1998).

The openness and richness of the discipline of archaeology in Iran in the 1960s encouraged the foundation of residential research institutes in Tehran. Key amongst these were the British Institute of Persian Studies (BIPS, founded 1961; Stronach 2012, 1950s–1970s British field projects in Iran are summarised in Moorey 1972) with its world-renowned journal *Iran* (Bosworth and Curtis 2006), and the Tehran branch of the Deutsches Archäologisches Institut (also founded 1961; Kleiss 1994; activities described in Helwing and Rahemipour 2011) and its journal started by Herzfeld in 1929 *Archäologische Mitteilungen aus Iran*. French and Italian institutes and universities were also pursuing multiple lines of research (Callieri and Genito 2012; Panaino 2012), while scholars from America, Austria, Belgium, Canada, Denmark and Japan joined their Iranian colleagues in archaeological and historical researches across the range of Iran. From 1965 the Belgian Archaeological Mission in Iran (BAMI) conducted research in the Pusht-i Kuh region of Luristan, as a joint venture of Ghent University and the Royal Museums of Art and History in Brussels, directed by Louis Vanden Berghe until 1979 (Haerinck 2009). Founded in 1971, the American Institute of Iranian Studies employed William M. Sumner as its first resident director (Miller and Abdi 2003: 1). At the same time, the University of Tehran trained waves of talented Iranian archaeologists who progressed to senior positions within the framework of Iranian archaeology, including Yussef Majidzadeh, Sadegh Malek Shahmirzadi, Massoud Azarnoush and Mahmoud Mousavi, amongst many others (Mousavi 2013b: 11).

On this foundation of indigenous capabilities and confidence, combined with truly international engagement, a host of short- and long-term projects investigating most periods of the past of Iran was able to flourish through the 1960s and 1970s (summarised in Young 1986a; Stronach 1998; see also Dyson 1997b; Helwing in press-a), which can be most comfortably presented in table form (Table 3.1). The table, which does not purport to be exhaustive, or to be definitive in its period assignations, or to cover projects later in date than Achaemenid, demonstrates at a glance the global extent of institutional and professional involvement in studying the past of Iran during the period 1960–1978, justifying our characterisation of it as a golden age. As Young (1986a) has emphasised, the table demonstrates a concentration of archaeological effort in particular regions of Iran, including Khuzestan, Azerbaijan and the central-west Zagros.

After the revolution: 1979–2000

The Iranian Revolution of February 1979 brought a sudden and complete end to the age of international collaboration, exacerbated by the eight-year long Iran-Iraq war from 1980. Furthermore, because of Mohammed Reza Shah's co-option of the Achaemenid remains at Pasargadae and Persepolis into his 1971 celebrations of the 2500th anniversary of the foundation of the Persian empire by Cyrus the Great, the new regime in Tehran regarded all archaeology with suspicion. The University of Tehran's Department of Archaeology was closed down for three years, while the Institute of Archaeology lay dormant till 1990 (Abdi 2001a: 70). New excavations at Susa were commissioned in 1982, led from 1994 onwards by Mir-Abedin Kaboli (Kaboli 2000). Chance discovery and excavation of a major Neo-Elamite tomb at Arjan in 1982 is one of the few archaeological highlights of this era (Alizadeh 1985a). In 1985 the Iranian Cultural Heritage Organisation (ICHO) was formed, incorporating the Centre for Archaeological Research, the Iran Bastan Museum and other institutions (Mousavi 2013b: 12).

Table 3.1 Major survey and excavation projects in Iran, 1960–1979 (partly based on Young 1986a: tables 1–2)

Period (approximate)	*Site*	*Institution*	*Director*	*Fieldwork dates*
Palaeolithic	Kunji Cave	University of Michigan	John Speth	1969
Palaeolithic	Khorramabad Caves	University of Michigan, Museum of Anthropology	Frank Hole and Kent Flannery	1967
Palaeolithic	Kiaram I Cave, Ali Tappeh	University of Cambridge	Charles McBurney	1963
Palaeolithic	Warwasi Cave	Oriental Institute, Chicago	Robert Braidwood	1959–1960
Palaeolithic	Ladiz	University of Minnesota	Gary Hume	1966–1967
Palaeolithic	Kashafrud Basin	Centre National de la Recherche Scientifique	Ariai and Thibault	1974–1975
Palaeolithic/Neolithic	Luristan survey	Danish Archaeological Expedition	Peder Mortensen	1963–1965
Neolithic	Tepe Guran	Danish Archaeological Expedition	Henrik Thrane	1963–1965
Neolithic	Ganj Dareh	University of Montreal	Philip Smith	1965–1974
Neolithic	Abdul Hosein	London University/British Institute of Persian Studies	Judith Pullar	1978
Neolithic	Asiab and Sarab	Oriental Institute, University of Chicago	Robert Braidwood	1959–1960
Neolithic	Ali Kosh, Chagha Sefid, Tepe Sabz	University of Michigan, Museum of Anthropology	Frank Hole and Kent Flannery	1961–1969
Neolithic	Hajji Firuz	University Museum, University of Pennsylvania	Mary Voigt	1968
Neolithic	Tepe Tula'i	Yale University	Frank Hole	1973
Neolithic	Sang-e Chakhmaq	Tokyo University of Education	Seiichi Masuda	1971–975
Neolithic/Chalcolithic	Mushki, Jari, Gap, Bakun	University of Tokyo	Shinji Fukai	1965
Neolithic/Chalcolithic/ Bronze Age	Chogha Mish, Chogha Bonut	Oriental Institute, University of Chicago/UCLA	Pinhas Delougaz and Helene Kantor	1961–1977
Chalcolithic/Bronze Age	Tureng Tepe	Paris University	Jean Deshayes	1960–977
Chalcolithic/Bronze Age	Yarim Tepe	British Institute of Persian Studies	David Stronach	1960–1962
Chalcolithic/Bronze Age	Yanik Tepe	Manchester University	Charles Burney	1960–1962
Chalcolithic/Bronze Age	Tepe Hissar	University Museum, University of Pennsylvania	Robert Dyson, Jr.	1976
Chalcolithic/Bronze Age	Shahr-i Sokhta	Italian Institute (IsMEO)	Maurizio Tosi	1967–1978
Chalcolithic/Bronze Age	Bampur	Royal Asiatic Society	Beatrice de Cardi	1966
Chalcolithic/Bronze Age	Tepe Yahya	Harvard University, Peabody Museum	Carl Lamberg-Karlovsky	1967–1975
Chalcolithic/Bronze Age	Tal-i Iblis	Illinois State Museum	Joseph Caldwell	1966
Chalcolithic/Bronze Age	Shahdad	Iranian Centre for Archaeological Research	'Ali Hakemi	1968–1978
Chalcolithic/Bronze Age	Malyan	University of Pennsylvania	William Sumner	1971–1978
Chalcolithic/Bronze Age	Farukhabad	University of Michigan, Museum of Anthropology	Henry Wright	1968
Chalcolithic/Bronze Age	Susa	Délégation archéologique française en Iran	Jean Perrot	1967–1978
Chalcolithic/Bronze Age	Djaffarabad	Centre National de la Recherche Scientifique	Genevieve Dollfus	1967–1976
Chalcolithic/Bronze Age	Haft Tappeh	Tehran University	Ezat Negahban	1966–1978
Chalcolithic/Bronze Age	Godin Tepe	Royal Ontario Museum	T. Cuyler Young	1965–1974
Chalcolithic/Bronze Age	Bani Surma, War Kabud	Belgian Archaeological Mission	Louis Vanden Berghe	1965–1979
Chalcolithic/Bronze Age	Zagheh, Qabrestan, Sagzabad	Tehran University	Ezat Negahban	1970–1979
Chalcolithic/Bronze Age	Haftavan Tepe	Manchester University	Charles Burney	1968–1978
Iron Age	Marlik	Iranian Archaeological Service	Ezat Negahban	1961–1962
Iron Age	Kordlar Tepe	Innsbruck University	Andreas Lippert	1971–1978
Iron Age	Hasanlu	University Museum, University of Pennsylvania	Robert Dyson, Jr.	1956–1977
Iron Age	Dahan-i Ghulaiman	IsMEO	Umberto Scerrato	1960–1965

(*Continued*)

Period (approximate)	*Site*	*Institution*	*Director*	*Fieldwork dates*
Iron Age	Pasargadae	British Institute of Persian Studies	David Stronach	1961–1963
Iron Age	Persepolis	IsMEO	Giuseppe Tilia and Ann Britt Tilia	1965–1978
Iron Age	Persepolis	Iranian Archaeological Service	Akbar Tajvidi	1969–1972
Iron Age	Baba Jan Tepe	Institute of Archaeology, London	Clare Goff	1966–1969
Iron Age	Nush-i Jan	British Institute of Persian Studies	David Stronach	1967–1977
Iron Age	Bisotun	Deutsches Archäologisches Institut	Wolfram Kleiss	1966
Iron Age	Jama Shuran	Royal Ontario Museum	Louis Levine	1978
Iron Age	Ziwiya	University Museum, University of Pennsylvania /Iranian Centre for Archaeological Research	Robert Dyson, Jr and M. Mo'tamedi	1964/1976–1978
Iron Age	Bastam	Deutsches Archäologisches Institut	Wolfram Kleiss	1968–1978
Multi-period	Khuzestan survey	Oriental Institute, Chicago	Robert Adams	1960
Multi-period	Khuzestan survey	University of Michigan, Museum of Anthropology	Henry Wright	1969
Multi-period	Atrek valley survey	University of Turin	R. Venco Ricciardi	1976–1978
Multi-period	Urmia survey	IsMEO	P. E. Pecorella and M. Salvini	1974–1978
Multi-period	Behbahan and Zohreh plains survey	Oriental Institute, University of Chicago	Hans Nissen and Charles Redman	1974
Multi-period	Kur River Basin survey	Ghent University	Louis Vanden Berghe	1951–1953

Regional offices were established across Iran, and archaeological sites began to be protected from looting. The year 1994 marked a watershed with the First National Archaeological Symposium of the Islamic Republic of Iran, held at Susa and with 38 contributing scholars including one of us (HFN; Alizadeh *et al.* 1996). In 1997 the Centre for Archaeological Research established three departments to undertake research in the fields of prehistoric, historic and Islamic archaeology. Outside Iran, ongoing publication of analytical bibliographies of Iranian archaeology, arranged by region and site, proved invaluable in sustaining research into Iran's past through often difficult times (Vanden Berghe 1979c; Vanden Berghe and Haerinck 1981, 1987; Haerinck and Stevens 1996, 2005; De Schacht and Haerinck 2013). The Belgian scholar of Iran, Ernie Haerinck at Ghent University, played a uniquely significant role in this respect and as long-term editor of *Iranica Antiqua* (Overlaet 2017).

Sporadically but steadily, international connections were re-established by and with Iranian colleagues in the years since 1995. The first joint project since the revolution fittingly involved an Iranian archaeologist based at the Oriental Institute, University of Chicago, Abbas Alizadeh, who carried out surveys in Fars in 1995 with colleagues from ICHO followed by excavation at Chogha Bonut in Susiana in 1996 (Alizadeh *et al.* 1996; Alizadeh 2003a). ICHO also began sponsoring symposia on Iranian archaeology, although without foreign participation, in Susa in 1994 and Tehran in 1997, as well as issuing a regular journal *Archaeological Reports of Iran*. Equally positive was the foundation from 1988 of new University Departments of Archaeology at Tarbiyat-e Modarres (Tehran), the Free University at Abhar, Kazerun and Tehran, Zahedan and Bu Ali Sina (Hamadan).

Difficult rebirth of a discipline: 2001–2020

The wave of positive change came to a head with the election of President Khatami in 1997 and has broadly continued since then, although not without significant halts along the way. In 2003 the Iranian Center for Archaeological Research (ICAR) was re-founded and its activities, including several international engagements, enhanced by its director Massoud Azarnoush (Azarnoush and Helwing 2005; Mousavi 2010). Azarnoush was especially keen that Iranian archaeologists would be able to meet the challenge posed by major programmes of civil construction and development throughout Iran, in particular through a nation-wide programme of dam building (Ghasemi and Watson 2014). Principal among such programmes was the 2003 Sivand Dam Archaeological Project, involving archaeologists from Iran, France, Germany, Italy and Poland (Mousavi 2013b: 12). New Iranian projects began at Jiroft in south-eastern Iran (Madjidzadeh 2003; Lawler 2004) and at Sialk (Malek Shahmirzadeh 2006), followed by multiple projects co-directed by Hassan Fazeli Nashli and colleagues on behalf of the University of Tehran and

ICAR. Joint Iranian-Japanese surveys and excavations got underway in the Gilan region of northern Iran from 2001 (Tadahiko *et al.* 2003, 2004a, 2004b, 2005, 2006). Archaeological research in Khuzestan, the birthplace of Iranian archaeology, was revitalised through new Iranian field and research projects, led by Abbas Alizadeh (Alizadeh 2003a, 2008; Alizadeh *et al.* 2004) and Abbas Moghaddam (Moghaddam and Miri 2007; Moghaddam 2012a), while research into Susa, Susiana and Elam has been hugely advanced by academics from Iran and teams based partly in Australian universities (Potts 2016; Álvarez-Mon *et al.* 2018a; Álvarez-Mon 2020).

While several collaborative projects between Iranian and foreign archaeologists have started in the first two decades of the 21st century none of them has continued without break since their start, often due to problems with issue of necessary permits and visas. Of greater significance for the archaeology of Iran has been the development of indigenous capability and activity in Iranian archaeology, particularly within the university environment. This development has been especially marked in the field of prehistoric archaeology, with a new focus on the Palaeolithic (Vahdati Nasab 2011; Heydari-Guran 2014; Vahdati Nasab and Aryamanesh 2016) and Neolithic (Matthews and Fazeli Nashli 2013; Roustaei and Mashkour 2016) periods of Iran's distant past. A significant feature of the new phase of archaeological research in Iran is the development and application of scientific techniques to the material evidence. These have included ambitious programmes of radiocarbon dating for local and regional sequences, as well as integrated approaches to archaeological landscapes, environments and subsistence practices, for example, through inter-disciplinary research (Miller 2003, 2013). As an illustration of these positive developments, in 2013 a total of 21 Iranian archaeologists, employed by ten different universities located across Iran, contributed articles to a synthetic study of the Neolithic transition in Iran (Matthews and Fazeli Nashli 2013).

A distinctive and still greatly under-developed area of research in Iran is historical archaeology, the investigation of the material remains of the recent past through the archaeological lens (Hicks and Beaudry 2006). Within Robin Coningham and Hassan Fazeli Nashli's project Socio-Economic Transformations of the Tehran Plain, recently abandoned "landlord villages" of the region were investigated as archaeological sites and the results integrated with information gathered through interviews with people who had inhabited those villages until their abandonment in the 1960s–1970s through the land reform programme known as Iran's "White Revolution." The production of detailed plans of the mudbrick villages, spatial analysis of recovered artefacts and the recording of rates and processes of deterioration of structures, generated valuable insights into contemporary historical processes as well as informing archaeological and historical interpretations more broadly (Figure 3.6) (Fazeli and Young 2008, 2013; Fazeli *et al.* 2009; Young and Fazeli 2013, 2018).

In 2011 the offices of ICAR were moved from Tehran to Persepolis (Mousavi 2013b: 13) only to be moved back again with the end of President Ahmadinejad's spell in power. While the practice of archaeology in Iran by non-Iranians has proven challenging, often insurmountably so, it has not proven much easier for native Iranian archaeologists dealing with debilitating power struggles between national and local governmental authorities (Alizadeh 2014). The convening of Annual Symposia on Iranian Archaeology since 2002 has provided an opportunity for Iranian and non-Iranian archaeologists to present the latest results of their fieldwork and analyses. The Society of Iranian Archaeology was founded in Tehran in 2011 with the mission to "elevate and signify Iran's glorious cultural heritage through archaeological research" (brochure statement), partly through production of a biannual journal, the *International Journal of the Society of Iranian Archaeologists*.

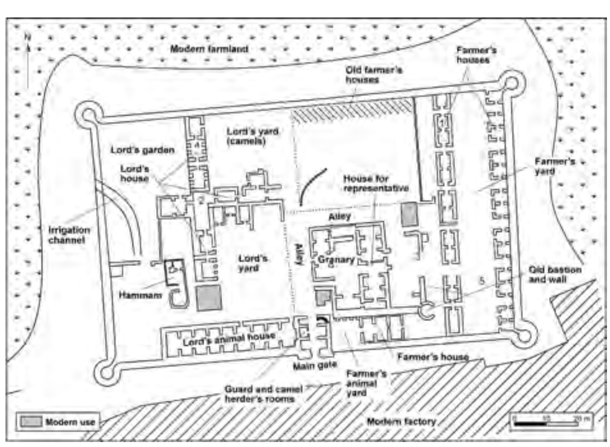

Figure 3.6 Historical archaeology: plan of Kazemabad landlord village, Tehran plain (Young and Fazeli 2018: Figure 2) (image courtesy of Ruth Young and Hassan Fazeli Nashli).

Figure 3.7 Neolithic gallery in the Iran Bastan Museum, Tehran (photo credit: Roger Matthews).

A significant development in recent years has been the holding in Iran of an International Congress of Young Archaeologists, first held in 2000 and subsequently in 2003, 2006, 2013, 2017 and 2019, at which only archaeologists under the age of 35 years are permitted to present papers, overseen by an international scientific committee. The health and scale of Iranian archaeology can be measured by the quantity and quality of delivered papers and by their swift and full publication following the congress (Azizi Kharanaghi *et al.* 2014b, 2019). Accompanying these positive developments, the Iran Bastan Museum in Tehran (Figure 3.7) has undergone a thorough modernisation to incorporate the major advances in recent years in our understanding of the Iranian past, with lavish galleries devoted to prehistory, early states and urban societies, the Achaemenid empire and beyond (Nokandeh 2017 is an excellent introduction to the museum's collections). Iran has also had considerable success in the nomination of archaeological and heritage sites to the UNESCO World Heritage List (Mozaffari 2014). In 2020, the list hosted a total of 22 Iranian cultural sites, including Susa, Shahr-i Sokhta, Chogha Zanbil, Pasargadae, Persepolis and Bisotun, plus two natural sites, with a further 56 sites on the Tentative List.

Welcome as all these developments are, Iranian archaeology remains in need of an enhanced skills base through training and experience in all aspects of modern scientific archaeology. Most of the Iranian experts, relatively few in number but highly talented, in fields such as palaeoclimatology, zooarchaeology and archaeobotany work abroad, especially in France and Germany, where they have access to the laboratories, libraries and advanced facilities necessary for pursuit of their research. An ongoing aim for Iranian archaeology must be the development of sustainable in-house, state-of-the-art laboratories, skills and expertise across the spectrum of scientific archaeology, an end that may most effectively be met through enhanced, integrated engagement with colleagues working in universities and museums around the world. Such developments, and many besides, will be feasible when circumstances allow a full and secure resumption of global engagement of Iranian colleagues with their international partners to a degree not truly witnessed in Iran since Iranian archaeology's Golden Age of the 1950s–1960s. We hope and we plan for such a time to come.

4 Peopling Iran: the Palaeolithic period, 500,000–12,000 BP

Putting people in the picture

In this chapter we aim to put Palaeolithic people into the picture, to enliven the stage that we have constructed in the previous chapters. In doing so, we recognise the challenges involved in bringing to life human or hominin societies of scores of millennia ago and more, especially those living prior to the Upper Palaeolithic revolution that hosted the arrival and flourishing of modern humans in the region. How then do we treat the Palaeolithic past of Iran, in our efforts to provide "more than a story from a faraway land, as remote from people as the epochs of geology" (Gamble 1999: 5), and how can we make best use of evidence from studies of historically recent or contemporary hunter–gatherer societies (Kelly 2013: xvi; Jordan 2014)? How did early hominins behave with each other and with other groups? What kinds of activities did they undertake and how resilient and adaptable were their modes of engagement with each other and with their natural and cultural environments? What patterns of change and continuity can we trace across the millennia of the Palaeolithic past of Iran?

In approaching the Palaeolithic period, we address the very question of what it means to be human, for it was during these unimaginably long millennia that our basic anatomy, genetic make-up and fundamental behavioural and social traits took the form that still shapes how and who we are today, even if we have largely turned our backs on the hunting-gathering lifestyle that was the dominant mode of human existence throughout the pre-Neolithic millennia. Palaeolithic mastery of fire, attested in South Africa 1 million years ago (Berna *et al.* 2012), further shaped the development of hominin lifeways and their environments, stimulating large-scale alteration of entire landscapes, encouraging pyrophytic flora and fauna to flourish and deployed as a hunting tactic for mass slaughter of prey. Used in cooking of otherwise inedible or indigestible plant and animal substances, fire greatly expanded the scope and nutritional accessibility of foodstuffs available to early hominins and early humans. Cooking by fire enabled hominins to benefit from greatly reduced gut and teeth size, shifting the nutritional emphasis from the gut to the brain, a step-change in the evolution of truly modern humans and their cognitive and social capacities (Wrangham 2009; Scott 2017).

The Palaeolithic period of Iran is of major significance in the study of the human past (Speth 2014), and yet archaeological investigation of this period has been under-developed. Recent and ongoing research, however, is starting to fill in some of the expansive blanks in our knowledge of Iran's deep-time human and hominin past. In Chapter 2, we stressed the importance of Iran's geographical location, spanning the boundary zones of Europe and Asia, and including the major routes of communication connecting these vast regions. For the Palaeolithic period, some of the key questions are: to what extent did Iran serve as a corridor for the movement of early hominin and human communities from west to east and south to north (Dennell and Roebroeks 2005; Petraglia 2005, 2010; Biglari and Shidrang 2006; Rose and Petraglia 2009; Bailey 2010; Vahdati Nasab *et al.* 2013a; Dennell 2020; Heydari-Guran and Ghasidian 2020); to what extent can we identify and interpret the development of local characteristics in the Palaeolithic communities of Iran; and, how do we interpret the often sparse and complex material evidence in terms of social and individual modes of behaviour amongst Palaeolithic hominin peoples?

A genuine knowledge and understanding of the millennia of the Palaeolithic past has only in recent years begun to be constructed through targeted research in Iran, conducted largely by Iranian archaeologists (for a history of Palaeolithic archaeology in Iran see Vahdati Nasab 2011; Conard *et al.* 2013a: 29–32; Heydari-Guran 2014: 1–4). Smith's (1986) overview of the Palaeolithic archaeology of Iran can now be significantly revised and augmented in the light of research over the past 35 years (Biglari 2010, 2012a; Vahdati Nasab 2011; Conard *et al.* 2013a; and the exemplary syntheses of Iran's Palaeolithic produced by Heydari-Guran 2014; Vahdati Nasab and Aryamanesh 2016). But undoubtedly scores of Palaeolithic sites lie as yet undiscovered across the plains and upland slopes of Iran: a single survey of parts of Kermanshah province, for example, detected more than 260 sites of Middle and Upper Palaeolithic date (Heydari-Guran and Ghasidian 2020; see also Biglari and Shidrang 2016).

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As we move through time in our study of Iran's Palaeolithic past, the depth of archaeological information increases significantly, with much of our knowledge focused on the Upper Palaeolithic phase. In all cases, proposed dates for Palaeolithic phases and sites are highly approximate. In this chapter, only, dates are given as BP (Before Present).

First steps: the Lower Palaeolithic, 500,000–200,000 BP

During the Lower Palaeolithic period, by far the longest and least understood single period in Old World prehistory, the genus *Homo* diversified and expanded its geographical range from Africa across Eurasia. Throughout these many millennia and across large regions, techniques of artefact manufacture remained relatively stable, strongly suggesting both inherent technological conservatism and considerable success as a strategy for long-term hominin-environment engagement.

The millennia of the Lower Palaeolithic of Iran, arguably "the most understudied archaeological period in Iran" (Vahdati Nasab and Hashemi 2016: 144), are likely to remain obscure for some time to come. As of 2020 there has been almost no excavation of *in situ* archaeological evidence from the Lower Palaeolithic of Iran (Biglari and Shidrang 2006; Conard *et al.* 2013a: 33), with the exception of test trenching in Darband Cave in Gilan province (Biglari *et al.* 2014). Otherwise, our information comes exclusively from surface finds of artefacts typologically assigned to the Lower Palaeolithic, which have been recovered from more than a dozen regions widely distributed across Iran (Figure 4.1). Lower Palaeolithic stone tool assemblages in Iran (Figure 4.2) are characterised by extensive use of choppers, core-choppers and large flakes, with minimal occurrence of the distinctive bifacial hand axes that typify contemporary assemblages in regions west of the Euphrates (Hole 2008), and which are frequently associated with the distribution of the hominin *Homo erectus*. While relatively few in number, it is notable that putative Lower Palaeolithic sites occur in almost all regions of the country with the exception of the central deserts. It is certain that many more Lower Palaeolithic sites remain to be located through intensive field survey – one survey along the Tigris valley in neighbouring Iraq, for example, identified 22 Lower Palaeolithic sites in an area of only 15 km^2 (Mazurowski 1987).

Key surveyed sites for the Lower Palaeolithic of Iran include the complex of locations in the Kashafrud basin of north-eastern Iran (Ariai and Thibault 1975; Biglari and Shidrang 2006: 161–162; Jamialahmadi *et al.* 2008). Stone artefacts from the **Kashafrud** sites indicate local production of tools, largely from quartz pebbles, including flakes, scrapers, notches and awls, an assemblage broadly comparable to East African Oldowan tool collections as well as to those recovered in excavations from the site of Dmanisi in Georgia to the north, where remains of a form of *Homo erectus* dated to 1.75 million years ago have been recovered (Vekua *et al.* 2002). In south-eastern Iran, late Lower Palaeolithic or early Middle Palaeolithic tool assemblages were recovered at a series of river terrace sites in the region of Ladiz (Hume 1976; Biglari and Shidrang 2006; Vahdati Nasab *et al.* 2010a), while Lower Palaeolithic assemblages are also attested in western and north-western Iran. Of particular note is a scatter of stone tools and debitage in the Gakia area, close to Kermanshah, some of which appear to be Lower Palaeolithic in date (Biglari and Shidrang 2006: 164). Further north, in the western Alborz region, the site of **Ganj Par** has produced large numbers of Lower Palaeolithic implements, including cores, bifaces, flakes and hammer stones, many made from limestone (Biglari *et al.* 2004; Biglari and Shidrang 2006: 166; Biglari and Jahani 2011). The location of Ganj Par is significant, situated on the Sefid Rud valley, which provides good access to multiple regions of Iran and beyond, in particular towards the Caucasus. Only 16 km from Ganj Par, the cave site of Darband is so far the only known cave in Iran with evidence for Lower Palaeolithic occupation. Recent excavations at **Darband Cave** (Figure 4.3) suggest occupation dating back to 250,000 years. To the west, in western Azerbaijan, the site of **Shiwatoo**, and in Zanjan the site of **Khaleseh**, have yielded typical Lower Palaeolithic artefacts, including Acheulean chopper-cores, large flakes and pebble tools (Jaubert *et al.* 2006; Alibaigi *et al.* 2010, 2012a). On the western slopes of the Zagros, several Lower Palaeolithic sites have been identified through survey of the Mehran and Deh Luran plains (Biglari *et al.* 2000; Darabi *et al.* 2012; Zeynivand 2017).

The only known faunal evidence from the Lower Palaeolithic of Iran comes from Darband Cave, showing a predominance of cave bears with some ungulates (Biglari and Jahani 2011: 9, 13). For further information on the fauna and environment of late Lower Palaeolithic Iran, we turn to the briefly excavated site of **Barda Balka**, across the border in the western foothills of the Iraqi Zagros (Wright and Howe 1951; Braidwood and Howe 1960; Matthews 2000: 14; Howe 2014). Recovered faunal remains indicate the presence of Indian elephant, rhinoceros, large wild cattle, sheep/goat and a wild equid, probably onager. These remains, which date to the very end of the Lower Palaeolithic, give some idea of the great diversity of wildlife potentially hunted by early hominins in Iran. The recovery at **Pal Barik** in the Hulailan valley of Luristan of stone tools comparable to those excavated at Barda Balka (P. Mortensen 1993; Conard *et al.* 2013a: 33) suggests contemporary occupation also in this region of the Zagros.

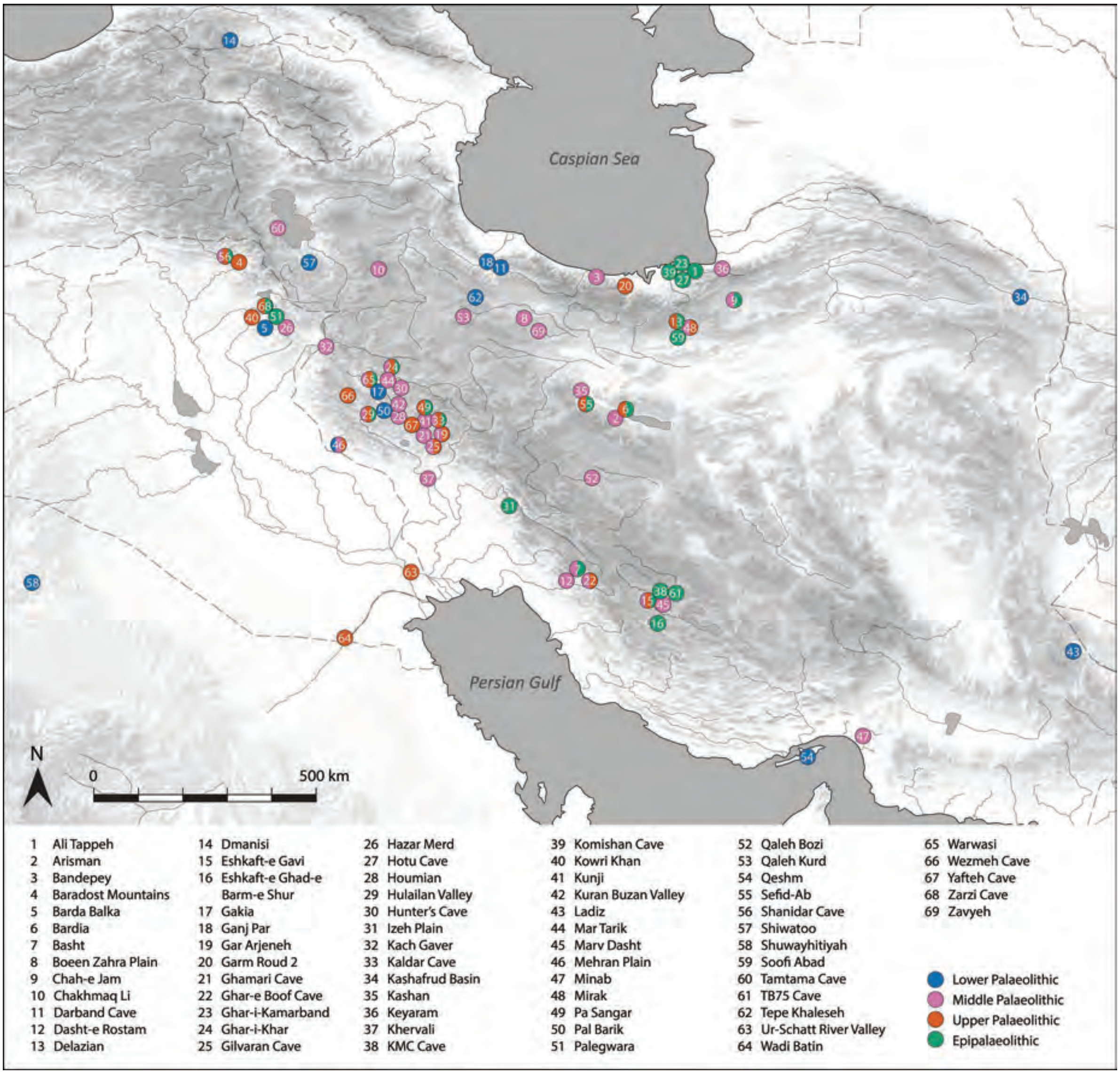

Figure 4.1 Palaeolithic sites of Iran by period.

The potential significance of Iran as a corridor for hominin migration is indicated by the presence of major Lower Palaeolithic sites in adjacent regions, such as the site of Shuwayhitiyah in northern Saudi Arabia (Whalen *et al.* 1989). Dated to 1.4–1.3 million years old, the evidence from Shuwayhitiyah traces possible migration routes of early hominins, probably *Homo erectus*, out of Africa and into Eurasia. The presence of numbers of Lower Palaeolithic sites in the Arabian Peninsula, particularly Oman, supports the proposal that early hominin dispersal from East Africa took place across Arabia and the then-dry Persian Gulf directly onto the Iranian plateau (Biglari and Shidrang 2006: 167; Otte *et al.* 2009: 157; Dennell 2020). Discovery of Lower-Middle Palaeolithic traces on the Persian Gulf island of Qeshm near the Straits of Hormuz (Dashtizadeh 2010) strengthens the case for early hominin movement along this route.

The location of Lower Palaeolithic sites in Iran and adjacent regions suggests a preference for open-air habitation, rather than cave-dwelling, with access to a range of environments, including mountains, foothills, river terraces and lake shores. Should any of the Iranian Lower Palaeolithic sites predate 1.5 million years old, which is far from established, it is likely that the archaic hominins involved consumed a largely or exclusively plant-based diet, but with the appearance of *Homo erectus* from *c.* 1.6 million years ago, meat formed a more significant part of the hominin diet, whether scavenged or hunted (Robinson 2014). From that time, small groups of Lower Palaeolithic hominins were doubtless following herds of hunted animals

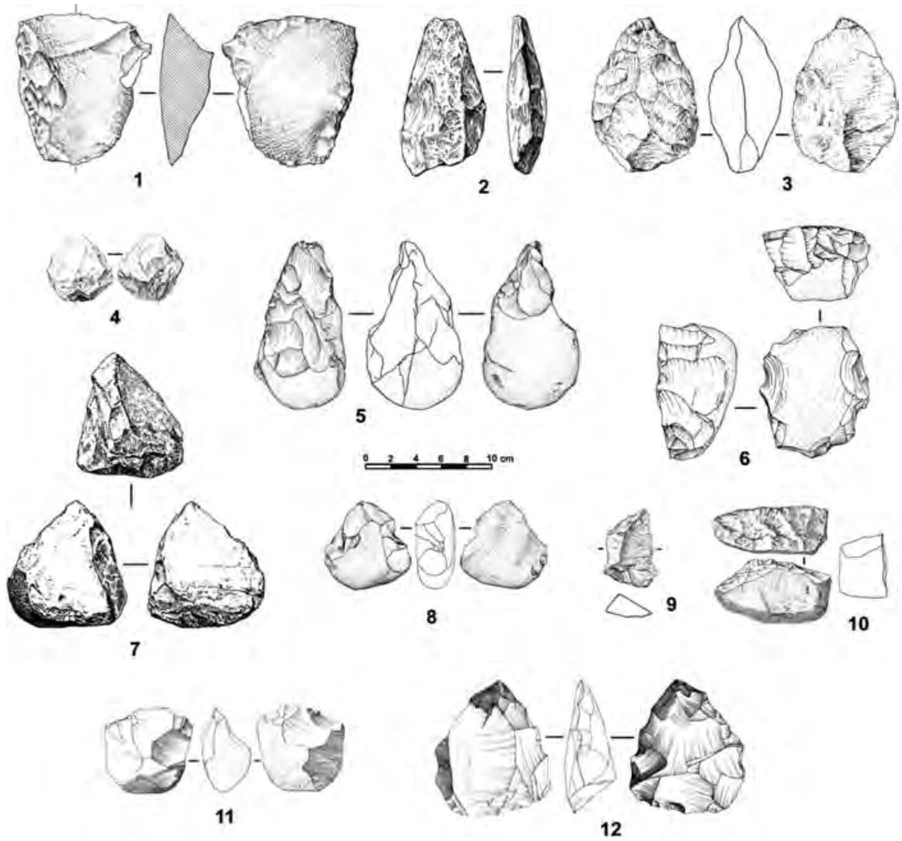

Figure 4.2 Lower Palaeolithic stone tools from assorted sites of Iran (Biglari and Shidrang 2006: 162) (permission courtesy of Fereidoun Biglari).

Figure 4.3 Darband Cave (arrow) overlooking the Siahrud river (photo credit: Fereidoun Biglari).

and gathering plant resources in their seasonal patterns of movement across the landscape, returning regularly to well-established sites but also expanding their geographic ranges as the years passed. Given the immense timespans of the Lower Palaeolithic, an annual range expansion of only a few square kilometres would in due course see the dispersal of hominin groups across all of Southwest Asia and beyond (Bar-Yosef and Belfer-Cohen 2001; Vahdati Nasab *et al.* 2013a).

"Complex and interesting": the Middle Palaeolithic, 200,000–40,000 BP

Our knowledge of Iran's Middle Palaeolithic period has been enhanced by recent research, following initial discoveries in the 1940s–1970s (Vahdati Nasab 2011; Vahdati Nasab and Hashemi 2016; Conard *et al.* 2013a), so that we can say that "the Middle Palaeolithic of Iran is much more complex and interesting than was thought until recently" (Conard *et al.* 2013a: 38). As well as evidence from multiple surveys, we also benefit from input from several excavated Middle Palaeolithic sites in Iran and adjacent regions. Earlier studies of the stone tool assemblages of Iran in the Middle Palaeolithic suggested lesser use of the Levallois core preparation technique than is attested to the west in the Levant and across Europe, generally in association with Neanderthal hominins (Hole 2008; Vahdati Nasab *et al.* 2009). More recent analyses, however, have revealed extensive use of the Levallois technique at Zagros Middle Palaeolithic sites such as Mar Tarik (Jaubert *et al.* 2009). In any case, the tool assemblages of the Middle Palaeolithic are marked by an increasing range of tool types designed and made for specific tasks, including points, side scrapers, perforators and gravers. The evidence from Middle Palaeolithic stone tools and from excavated faunal remains across Eurasia indicates that Neanderthals were adept at hunting large animal prey (Zilhão 2014). What is remarkable is the increased spread and density of Middle Palaeolithic sites across Iran, and indeed across all of Southwest Asia, as compared to the Lower Palaeolithic. Middle Palaeolithic stone tool assemblages are found widely across Iran and suggest a major influx of hominins, at least some of whom are likely to have been Neanderthals, across the region from *c.* 200,000 years ago. Mitochondrial DNA analyses suggest the possibility of an Asian, rather than European, origin for the Neanderthals (Meyer *et al.* 2014) which, if verified through future research, would place Iran centre stage in investigations of Neanderthal development and dispersal.

The Zagros region

Much of our knowledge of the Middle Palaeolithic of Iran comes from the Zagros region of western Iran (Heydari-Guran and Ghasidian 2020), but with increasing input from other areas. The Middle Palaeolithic of the broad region is most richly attested by excavations at **Shanidar Cave** in the northern Iraqi Zagros (Solecki 1971; Lindly 2005). Through 8.5 m of deposits of level D, the evidence takes the form of typical Mousterian stone tools, with little use of the Levallois technique. Faunal remains are dominated by wild goat, clearly the preferred prey of the inhabitants of the cave, along with wild sheep, boar and cattle. The most important finds, however, are the remains of ten hominin individuals, clearly identifiable as Neanderthals (Trinkaus 1983; Pomeroy *et al.* 2017, 2020) and dated to *c.* 60,000–45,000 years old, at least one of whom appears to have been deliberately buried. The Middle Palaeolithic evidence from Shanidar is supported by excavations at the caves of **Hazar Merd** (Figure 4.4), also in Iraqi Kurdistan, where hearths and assemblages of Mousterian tools were recovered, in this case without hominin remains (Garrod 1930). Lindly's (2005) analysis of the Middle Palaeolithic of the Zagros suggests that sites such as Shanidar and Hazar Merd were seasonally occupied only during the summer months, as access to these regions outside of summer during the Pleistocene would have been difficult or impossible due to snow and ice. For the rest of the year, hominin groups would have lived at lower elevations, where we have as

Figure 4.4 Hazar Merd Cave overlooking Suleimani plain, Iraqi Kurdistan (photo credit: Roger Matthews).

yet no information from excavated sites. Rose (2010: 857) has proposed that these Middle Palaeolithic groups alternated seasonally between summers in the high Zagros and winters in the Persian Gulf basin lowlands, taking advantage of the ample fresh water resources in the large lake that is postulated as dominating the region prior to the Holocene marine incursion into the Persian Gulf (Wilkinson 2012: 19–20).

Within the Iranian Zagros, starting in the south, Rosenberg's survey of the western Marv Dasht area of Fars located more than 20 sites with Middle Palaeolithic tools (Rosenberg 1990, 2003), while south of Shiraz a major Middle Palaeolithic site was found at Jahrom (Piperno 1972). Middle Palaeolithic rock shelter and open-air sites have been identified in the Dasht-e Rostam and Basht regions of western Fars (Ghasidian *et al.* 2009), including excavated levels at **Ghar-e Boof** underlying Upper Palaeolithic deposits (Conard and Zeidi 2019; see below), while survey of the Arsanjan region of the southern Zagros has identified multiple sites of Middle Palaeolithic date (Tsuneki 2013: 92). In the Bakhtiyari, Seimarreh and Kohgiluyeh regions of the south-central Zagros large numbers of Middle Palaeolithic stone tool scatters have been identified in surveys, including clear evidence for *in situ* knapping (Roustaei 2010b; Azadi 2017; Zeynivand *et al.* 2018).

Excavated sites in the Khorramabad region include **Kunji Cave**, with a radiocarbon date of *c.* 40,000 BP, and a stone tool assemblage dominated by side scrapers and Mousterian points, which may have been used to hunt the onagers attested in the faunal assemblage (Hole and Flannery 1968; Baumler and Speth 1993). In the same region, Ghamari Cave and Gar Arjeneh rock shelter have Middle Palaeolithic occupation, and further Middle Palaeolithic sites have been located in a more recent survey (Roustaei *et al.* 2004). The cave site of **Kaldar** in the Khorramabad valley is of special significance in that it contains rare evidence from Iran for occupation in both the Middle Palaeolithic and Upper Palaeolithic and has been extensively excavated (Bazgir *et al.* 2014, 2017). Layer 5 at Kaldar, as yet lacking chronometric dating, contains typical Mousterian lithics including Levallois flakes, blades, points and cores, shifting to a bladelet dominated lithic industry in Layer 4 of the Early Upper Palaeolithic, with dates spanning *c.* 50,000–23,000 BP (Shidrang 2018: table 10.1). Charcoal evidence from Kaldar and the nearby cave of Gilvaran shows the presence of plum and almond trees in both the Middle and Early Upper Palaeolithic phases, suggestive of temperate interstadial conditions characterised by open steppe (Allué *et al.* 2018). Their remains in these cave sites may indicate their use as fuel and for fruit by hominin occupants of the caves.

Further west, on the plain of Islamabad-e Gharb, the site of **Wezmeh Cave** appears to have been used mainly by carnivorous animals, but a single hominin premolar dated to a minimum of 25,000–20,000 BP and probably much earlier was also found (Abdi *et al.* 2002a; Trinkaus *et al.* 2008; Mashkour *et al.* 2009). Reassessment of this unerupted tooth from an individual aged 8 ± 2 years has confirmed its status as evidence of a Neanderthal presence in western Iran (Zanolli *et al.* 2019), now significantly predated by a single Neaderthal milk tooth from **Bawa Yawan** rock shelter, northwest of Kermanshah, dated to 44,000–41,000 BP (Heydari-Guran *et al.* in press). Study of pollen in coprolites from Wezmeh Cave reveals a steppe environment around the cave, with little evidence for stands of trees (Djamali *et al.* 2011b).

On the western edges of the Zagros, on the Mehran Plain, survey has identified seven sites with Middle Palaeolithic tool assemblages (Darabi *et al.* 2012: 447–448), while the site of Khervali at the northern limits of the Susiana plain hosts a significant spread of scrapers and other tools made with the Levallois technique (Bahramiyan and Shouhani 2016; Bahramiyan 2019). Within the Zagros range, the rock shelter at **Houmian** has Middle Palaeolithic evidence, arguably from summer only occupation with hunting of wild sheep and goat (Bewley 1984). A rare analysis of pollen from a Middle Palaeolithic site (Leroi-Gourhan 1984) indicates on the basis of the high representation of oak, pear and *Pistachia* at this high altitude (*c.* 1800 m asl) that the occupation of the cave took place during the Brorup Interstadial at 70,000–60,000 BP. In the Hulailan valley of Luristan, Mortensen's survey located three rock shelter sites and five open-air lithic scatters of Middle Palaeolithic date, including Levallois points and scrapers (P. Mortensen 1993). Surveys in the Hulailan valley and the nearby Kuran Buzan valley of the central Zagros have significantly increased the attested number of Middle Palaeolithic sites of this region (Alibaigi *et al.* 2011a; Davoudi *et al.* 2015). Further north in the Zagros, excavations at **Hunter's Cave** at Bisotun recovered a Zagros-type tool assemblage and faunal remains of red deer, onager and gazelle. Also from this cave came a fragment of a hominin arm bone, insufficiently preserved to be confirmed as Neanderthal (Coon 1951; Dibble 1984; Trinkaus and Biglari 2006). The nearby cave of **Ghar-i Khar** also yielded Middle Palaeolithic materials (Young and Smith 1966; Shidrang *et al.* 2016), as did the rock shelter of **Warwasi** where the faunal assemblage comprised onager, red deer, cattle, sheep and goat (Braidwood 1961; Dibble and Holdaway 1990, 1993). Excavations at **Malayerd Cave** west of Warwasi (Shidrang *et al.* 2014) and at sites in the Darian Dam salvage project in the Hawraman region (Biglari and Shidrang 2019) have also investigated rich layers of Middle Palaeolithic and Upper Palaeolithic date.

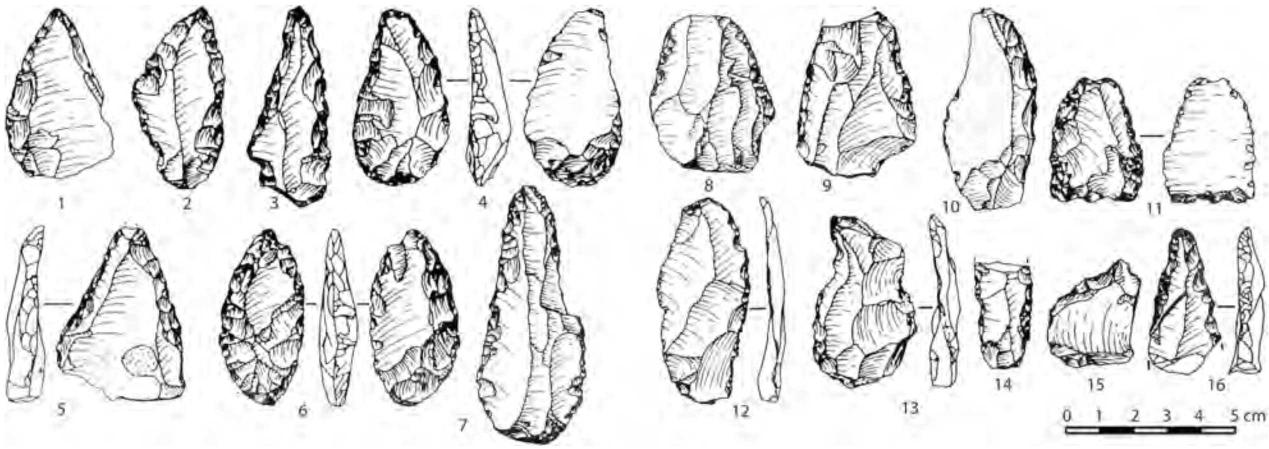

Figure 4.5 Middle Palaeolithic tools from Mar Tarik (Jaubert *et al.* 2009: Figure 1.5) (permission courtesy of Fereidoun Biglari).

The small cave site of **Kobeh** near Kermanshah city contains several metres of Middle Palaeolithic materials including lithics and faunal remains of large mammals, including a large wild equid probably onager (*Equus hemionus*), with some surface modifications (Marean and Kim 1998). On the Songhor plain near Kermanshah (Heydarian and Ghorbani 2016), at Warkaini rock-shelter (Shidrang 2006), and in the Marivan region of western Kurdistan province, wherein lies Lake Zeribar, archaeological survey has detected sites with lithics of Middle Palaeolithic type including Kach Gaver (Mohammadifar and Motarjem 2008). Test excavations at cave sites in the Razawar valley northwest of Kermanshah have recovered lithics and faunal remains of wild cattle, onager, goat and hare from levels of both Middle and Upper Palaeolithic date (Heydari-Guran and Ghasidian 2017).

Survey of the Bisotun massif by Biglari (2001) has led to excavations at the cave of **Mar Tarik**, yielding typical Zagros late Middle Palaeolithic tools (Figure 4.5), including points and scrapers with much use of Levallois technique (Biglari 2001; Jaubert *et al.* 2006, 2009; Vahdati Nasab and Vahidi 2011; Heydari-Guran 2014: 50). The tool assemblage shows strong relationships both with contemporary Zagros assemblages and with those found at Middle Palaeolithic sites in the Taurus region of Turkey and across the Caucasus (Jaubert *et al.* 2009: 25). Faunal remains from Mar Tarik include sheep/goat, gazelle and smaller components such as fish, reptiles and birds, and the site has been interpreted as a seasonal butchery station, taking advantage of proximity to routes of migratory animals. Human skull fragments and teeth found at Mar Tarik cannot with certainty be assigned to the Middle Palaeolithic, but they lack Neanderthal characteristics (Jaubert *et al.* 2009: 15). An intriguing limestone slab with incised rectilinear designs on two faces is also of doubtful context but, if of Middle Palaeolithic date as the excavators argue, is potentially of major significance as the earliest *objet d'art*, loosely defined, from Iran (Figure 4.6) (Jaubert *et al.* 2009: Figure 1.15). In the northern Zagros in Iranian Azerbaijan, Coon (1951) excavated Middle Palaeolithic tools and faunal remains from the cave site of Tamtama.

The northern highlands and Caspian region

Beyond the Zagros our knowledge of Middle Palaeolithic Iran is significantly reduced but with some important developments in recent years. In Mazandaran province, the cave site of **Ke Aram** (McBurney 1964) includes typical Mousterian artefacts and faunal remains of cattle, red deer and rhinoceros, indicative of a rich forest environment similar to that of the Caspian region today, while Middle Palaeolithic remains have also been recovered from Yar-Shalam in Gilan province (Biglari and Jahani 2011: 15). Along the southern Caspian coast at Bandepey major spreads of stone tools using the Levallois technique have been recorded (Vahdati Nasab *et al.* 2017). Open-air sites of similar date have also been located in the southern foothills of the Alborz range, with tools manufactured from locally available nodules of chert, quartzite and limestone (Berillon *et al.* 2006). It has been suggested that the environmental conditions of the Caspian region in the Middle Palaeolithic may have favoured a late survival of Neanderthal populations in this region (Dolukhanov *et al.* 2009) but further evidence is needed in order to test this theory.

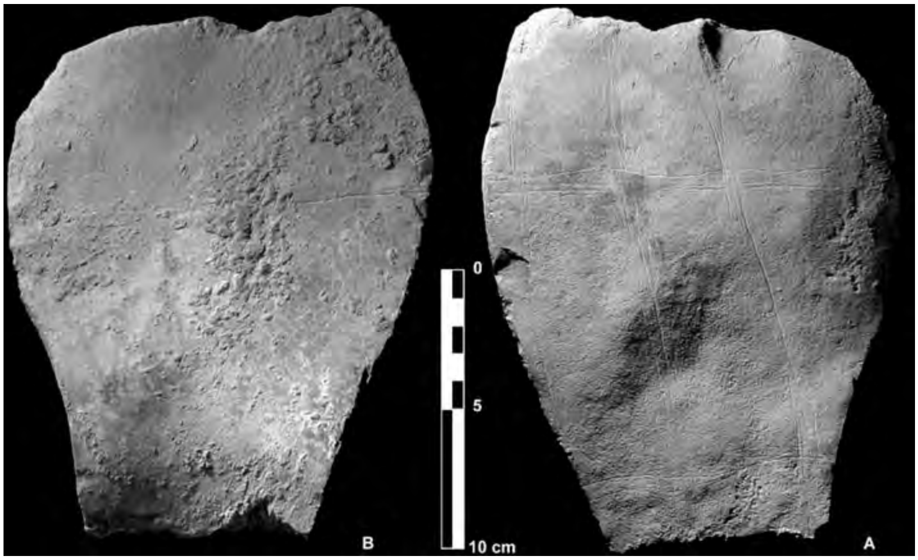

Figure 4.6 Engraved limestone slab from the Middle Palaeolithic site of Mar Tarik (Jaubert *et al.* 2009: Figure 1.15) (permission courtesy of Fereidoun Biglari).

The central plateau

Recent fieldwork has now established that the central plateau region of Iran was of major importance during the Middle Palaeolithic period (Biglari 2007; Eskandari *et al.* 2010; Conard *et al.* 2013a: 35; Vahdati Nasab and Hashemi 2016; Vahdati Nasab *et al.* 2019a). The distribution of Middle Palaeolithic sites across the central plateau reveals a preference for habitation in close proximity to travertine springs and lakes, now extinct, and gives some idea of the more favourable environmental conditions prevailing in this region during the millennia of the Middle Palaeolithic, with sites attested at altitudes even well above 2000 m, as at Chakhmaq Li well to the northwest of the plateau (Heydari-Guran *et al.* 2009; Conard *et al.* 2013a: 35; Heydari-Guran 2014). Hominin groups would also have been attracted to the rich availability of chert outcrops across much of this region, ideal for tool production. Important discoveries have been made along the north-central edges of the plateau, where the site of **Zavyeh** yielded points and scrapers of Levallois type (Djamali *et al.* 2006), also found at the cave site of **Qaleh Kurd** located at 2100 m above sea level in the mountains fringing the southern edge of the Qazvin plain (Soleymani and Alibaigi 2018) as well as at sites on the adjacent Boeen Zahra Plain (Vahdati Nasab *et al.* 2009).

The open-air site of **Mirak**, close to modern Semnan town, comprises an extensive spread of Middle Palaeolithic tools, including points, scrapers, cores and flakes, with much use of Levallois technology (Rezvani and Vahdati Nasab 2010; Vahdati Nasab *et al.* 2013a). The tool assemblage at Mirak has been interpreted as indicative of a palimpsest of short-term ephemeral campsites situated around reliable water sources on the edge of the central desert, with a focus on butchery and processing of meat and animal hides. Intensive field survey of an estimated ancient shoreline of the Chah-e Jam lake, at the north-eastern limits of the Iranian Central Desert, recovered a dispersed sprawl of largely Middle Palaeolithic tools, debitage and cores in a linear spread covering 8.5 by 3 km (Vahdati Nasab and Hashemi 2016). The commonest tools are scrapers and points, and 64% of pieces are formed by Levallois technology, significantly higher than in Zagros Middle Palaeolithic assemblages. While unlikely to represent *in situ* artefacts, the Chah-e Jam lithics are suggestive of long-term, repeated sets of hunting and butchery activities taking place along the shores of a major ancient lake.

On the western fringes of the central plateau, 25 km southwest of Isfahan, a cluster of cave and rock shelter sites has been surveyed and partially excavated at **Qaleh Bozi** (Biglari *et al.* 2009; Jaubert *et al.* 2010; Biglari 2014). Interestingly, the stone tool assemblages at these shelter sites differ from those recovered from contemporary open-air sites, with the Levallois technique much rarer at the rock shelter sites where points and side scrapers dominate. This differentiation may relate to seasonality of occupation or to variability in activity according to site location, but has also been associated with Middle Palaeolithic assemblages of Oman to the south, supporting Rose's (2010: 860) proposal of a significant Middle Palaeolithic presence distributed around the fresh water lake that stood in place of the lower Persian Gulf at that time. Faunal remains from Qaleh Bozi include equids, cattle and rhinoceros and sheep/goat and gazelle, with burning and cut marks indicating hominin involvement in animal butchery and marrow extraction, also attested through use-wear analysis of stone points (Claud *et al.* 2012). Smaller faunal and plant remains are indicative of steppe, forest and riverine environments. Stone tool assemblages dominated by use of the Levallois technique have been recovered at multiple open-air sites near Kashan and Arisman (Biglari 2004; Conard *et al.* 2009; Heydari-Guran and Ghasidian 2011). At the southern extremes of the plateau, Middle Palaeolithic sites have also been surveyed around Minab near the Straits of Hormuz (Conard *et al.* 2013a: 38) and in the region of Bushehr (Dashtizadeh 2009).

The eastern highlands

In the eastern highland zone of Iran there has as yet been little progress in identifying a significant Middle Palaeolithic presence, but it is too early to determine whether this apparent dearth of sites relates to lack of intensive fieldwork or to a genuine pattern of habitation distribution. An initial survey of the southern Khorasan region of eastern Iran, for example, detected significant numbers of Middle Palaeolithic lithic scatters (Nikzad *et al.* 2015). The common occurrence further east still, across southern Central Asia, of Middle Palaeolithic sites, including fragments of Neanderthal hominin remains (Davis and Ranov 1999; Coolidge 2010), indicates that Neanderthal access to Central Asia must have been via the land of Iran.

Trends in the Middle Palaeolithic of Iran

In conclusion, appreciation of Iran's Middle Palaeolithic millennia is developing apace as field research continues. The main features include evidence for significant regional and local diversity in stone tool assemblages, arguably related to a range of factors including seasonality of occupation, functional and stylistic variability, as well as perhaps to change through time and possibly to hominin type. Alongside the regional diversity, however, there is also a strong component of compatibility of Iranian stone tool assemblages with contemporary evidence from a much broader region, including Turkey and the Caucasus. This transregional picture is suggestive of large-scale connectivity and communication amongst widely spaced hominin groups throughout the Middle Palaeolithic, at least some of whom were of Neanderthal type. The predominance of the Zagros region, at least as a major source of evidence, is undeniable, but it is now evident that other regions of Iran, including the northern highlands and the central plateau, were also of considerable importance. It is also clear that, contrary to previous understanding, open-air sites are more common than cave or rock shelter sites in the Middle Palaeolithic (Vahdati Nasab *et al.* 2013a).

The distribution of Middle Palaeolithic sites along natural corridors across the landscape of Iran suggests the long-term importance of these route-ways far back into the Palaeolithic. Vahdati Nasab *et al.* (2013a; Jayez *et al.* 2019a; Dennell 2020; Heydari-Guran and Ghasidian 2020) postulate three migratory corridors for Middle Palaeolithic foragers across Iran: the north coast of the Persian Gulf and the Sea of Oman in southern Iran, the southern shore of the Caspian Sea in northern Iran and the boundary between the southern foothills of the Alborz mountains and the northern edge of the central desert in north-central Iran (Figure 4.7). Proximity of Middle Palaeolithic sites to natural corridors may also relate to hunting strategies of migrating game such as gazelle, deer and onager. Future researches into the Middle Palaeolithic of Iran will need to refine the still vague chronology of habitation, as well as more rigorously consider potential explanations for local and regional variability in stone tool and faunal assemblages. Input from palaeo-environmental studies will also be of major significance in advancing our understanding of this key period, building on initial indications of sequences of alternating glacial-interglacial and stadial-interstadial stages through 125,000–70,000 BP at least, with summer snow lines as low as 1200 m in contrast to a present level of 4000 m (Djamali *et al.* 2008).

The first Iranian revolution: the Upper Palaeolithic and Epipalaeolithic, 45,000–12,000 BP

The onset of the Upper Palaeolithic is characterised by a major shift in the development of hominin communities, visible in archaeological evidence from across the Old World. This shift is so marked that it has been reasonably defined as "the Upper Palaeolithic revolution" (Gilman 1996; Bar-Yosef 2002; Ghasidian 2014: 13). Major issues include the role of climate and environmental change, the significance of hominin/human demography and migration, including the extinction of Neanderthals and the rise to dominance of modern humans, and the nature and pace of change from the Middle Palaeolithic to the Upper Palaeolithic. Archaeological features of the

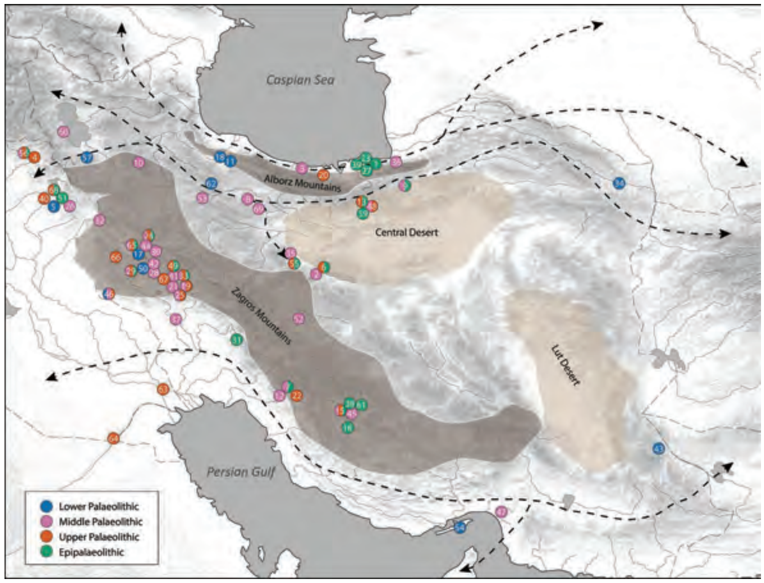

Figure 4.7 Palaeolithic migratory corridors on the Iranian plateau (after Vahdati Nasab *et al.* 2013a: Figure 10). For site code, see Figure 4.1.

Upper Palaeolithic revolution across Southwest Asia include (1) a shift from flake to blade-based, and eventually microlithic, stone tool assemblages; (2) increased use of bone and antler material in artefact manufacture; (3) development of ground stone tool technology and use; (4) concern for body decoration in the form of beads and pendants; (5) evidence for long distance engagement through movement of raw materials such as stones and shells; (6) development of storage facilities such as pits; (7) sophisticated cooking/heating installations; and (8) spatial differentiation of activity within occupation sites. Taken together these attributes are interpreted as

> evidence for rapid technological changes, emergence of self-awareness and group identity, increased social diversification, formation of long-distance alliances, the ability to symbolically record information and that these are being the most typical expressions for the capacity of Upper Paleolithic humans for modern culture.
> (Bar-Yosef 2002: 369)

The issues outlined above can be addressed with varying degrees of detail and confidence using the available Upper Palaeolithic evidence from Iran and neighbouring regions, once more with much of the recovered sites and materials coming from the Zagros region of western Iran and eastern Iraq (Shidrang 2018; Heydari-Guran and Ghasidian 2020), but with increasing input from other regions of Iran (Otte *et al.* 2009; Conard *et al.* 2013a). The Upper Palaeolithic of Iran, and of Iraq (Matthews 2000: 23–29), is conventionally treated as a series of sequential phases, defined on the basis of stone tool assemblages. The so-called Baradostian phase, named after the Baradost mountains where Shanidar Cave is located, lasts from *c.* 45,000 to 20,000 BP, while the Zarzian or Epipalaeolithic phase, named after the site of Zarzi Cave, lasts from *c.* 20,000 to 12,000 BP. As excavated evidence increases from Upper Palaeolithic sites of the Zagros region, in particular, it has become clear that there were multiple parallel lithic traditions across the regions of the Zagros through the Upper Palaeolithic phases, indicating a complex mosaic pattern of cultural development associated with the spread of human communities here and beyond (Conard and Ghasidian 2011; Ghasidian *et al.* 2017). As we see below, a striking feature of much of the Upper Palaeolithic, in Iran and especially in Iraq, is the lack of evidence for cultural continuity through its successive phases, with few or even no sites convincingly showing continuity of occupation through Middle to Upper to Epipalaeolithic (Conard *et al.* 2013a; Shidrang 2018). What might be the significance of climate and environmental change in forming this picture?

A critical factor is the uncertain dating of the transition from Middle to Upper Palaeolithic in Iran and across much of Southwest Asia (Becerra-Valdivia *et al.* 2017; Heydari *et al.* 2021). It is however clear that there was a significant overlap in the presence in Southwest Asia, at least, of both Neanderthals and anatomically modern humans over at least several millennia, with genetic evidence for interbreeding outside Africa leading directly to the presence of 1.5–2.1% of Neanderthal-derived DNA in all non-sub-Saharan-African-origin modern humans (Prüfer *et al.* 2014). We accommodate this overlap in our chronology here by ending the Middle Palaeolithic at *c.*

40,000 BP and commencing the Upper Palaeolithic at *c.* 45,000 BP, a start date in accordance with a programme of dating and Bayesian modelling of radiocarbon determinations from Upper Palaeolithic levels at Yafteh Cave, Ghar-e Boof and Shanidar Cave (Becerra-Valdivia *et al.* 2017: Figure 9; Heydari *et al.* 2021). These dates suggest that modern humans were initially present and active in western Iran at approximately the same time as in the Levant (Douka 2013) and southern Europe (Wood *et al.* 2014), and may well have overlapped significantly with existing Neanderthal populations at least in the Zagros region (Shidrang 2018).

By the Upper Palaeolithic period we start to benefit from the availability of chronologically well-defined information on ancient climate and environment of Southwest Asia (Bar-Matthews and Ayalon 2003). The major source of environmental proxy data for Iran is the deep pollen core from Lake Zeribar in central western Iran (Snyder *et al.* 2001; Wasylikowa 2005; Wasylikowa and Witkowski 2008), supported by evidence from Lake Mirabad and Lake Urmia in Iran and Lake Van in eastern Turkey (Stevens *et al.* 2006; Djamali *et al.* 2008; Litt *et al.* 2014; Pickarski and Litt 2017). The Zeribar core provides evidence for at least the local vegetation of the central Zagros region over more than 40,000 years (van Zeist 2008a). For the period 48,000–38,000 BP, scattered stands of oak, maple and pistachio trees are steadily represented, fluctuating in density according to variations in aridity. Between 38,000 and 15,000 BP there is a collapse of tree representation in the pollen record from Zeribar, which occurs in association with the full onset of the Late Glacial Maximum (LGM), or last Ice Age, with severely reduced temperatures and decreased rainfall at a time when 30% of the earth's surface was covered in ice. During these centuries, which cover the bulk of the Upper Palaeolithic, the vegetation of the Zeribar region, and doubtless well beyond, was that of mountain tundra, steppe and scrub-steppe, situated in a cold and arid environment. These conditions would not have been conducive to human occupation of the region, particularly at the higher, colder altitudes. During the LGM, global sea levels were much lowered, with the Caspian Sea at 50–58 m lower than its present level (Coolidge 2005; Yanina 2012). What is today the Persian Gulf was then the south-eastern tip of the Fertile Crescent, a low-lying floodplain receiving the waters of the Tigris-Euphrates, Karun and Wadi Batin river systems combined in the massive Ur-Schatt river valley (Kennett and Kennett 2007; Rose 2010: Figure 2; Wilkinson 2012: 19–20). Along with drainage from adjacent upland zones in Arabia and Iran and upwelling springs, the Ur-Schatt waters emptied into a massive fresh-water lake, >100,000 km^2, which may have attracted a significant human presence during the Late Pleistocene and Early Holocene (Rose 2010).

During the Bølling-Allerød interstadial, *c.* 15,000–13,000 BP, a warmer, wetter climate provided the context for the development of Epipalaeolithic communities as discussed below (Figure 4.8). From 12,000 BP, towards the end of the Younger Dryas cold, dry spell, the lake core evidence indicates a rapid expansion of grasses across the region, but the full spread of oak forest over the Zagros did not take place till after *c.* 7000 BP, long after the end of the Upper Palaeolithic (Roberts 2002). These patterns of vegetation development, and their climatic implications, would certainly have had significant impact upon human presence and activity across the region, but let us turn to the archaeological evidence for further clarification.

The Upper Palaeolithic, 45,000–20,000 BP

Upper Palaeolithic sites are found sporadically across Iran but extremely few sites have evidence for continuity either from the Middle Palaeolithic or into the Epipalaeolithic. The cave sites of Kaldar in the Khorramabad valley and Ghar-e Boof in the southern Zagros are rare examples of sites with stratified material spanning the

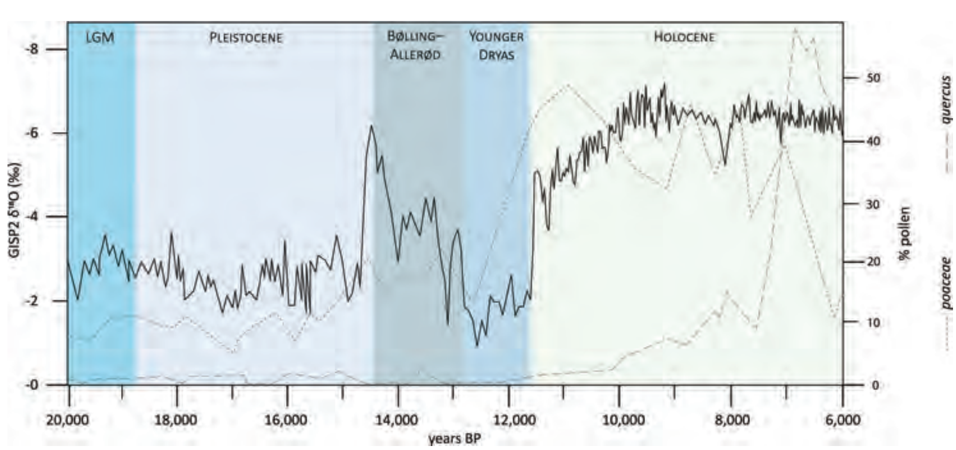

Figure 4.8 Global temperature variation over the past 20,000 years, according to Greenland ice cores.

Middle to Upper Palaeolithic transition, even if the dating of that transition remains unclear (Bazgir *et al.* 2017; Becerra-Valdivia *et al.* 2017; Heydari *et al.* 2021). Much of the surveyed and excavated material comes from cave and rock shelter sites and, once more, the Zagros region is of special significance. There have been attempts to divide the Upper Palaeolithic into early and late phases on the basis of a reduction in implement size, based on material excavated at Yafteh Cave and other sites in the Khorramabad region of the south-central Zagros (Hole and Flannery 1968) but this scheme has limited applicability across the broader region. Typical stone tools of Upper Palaeolithic assemblages include points, backed blades and bladelets, burins and a variety of scrapers (Conard *et al.* 2013a: 39), all attesting increasingly sophisticated use of task-specific tools.

Shanidar Cave in the Iraqi Zagros is once more of key significance for approaching the Upper Palaeolithic of the region. Limited radiocarbon dating evidence from Shanidar suggests a gap of at least 10,000 years between the top of level D, the Middle Palaeolithic, and the bottom of level C, the Early Upper Palaeolithic. Level D top is dated to *c.* 47,000 BP while level C bottom dates to *c.* 35,000 BP, with other dates from level C bottom up ranging from *c.* 35,000 to 28,700 BP (Becerra-Valdivia *et al.* 2017: table 2). These dates suggest a long abandonment of the region following the demise of the Neanderthals, an interpretation supported by the fact that no other Upper Palaeolithic sites have been located in the Iraqi Zagros, with the possible exception of Kowri Khan on the Chemchemal plain well to west (Braidwood and Howe 1960: 55–56). The apparent lack of Upper Palaeolithic sites in the region argues against the idea that Neanderthal demise, at least in this region, was directly consequent upon significant incursion by modern humans into pre-existing Neanderthal territory. Much further fieldwork is required in order to address this issue, however, and further multi-period surveys taking place across both the Iraqi and Iranian Zagros are likely to deliver important evidence on this topic.

Level C at Shanidar is marked by a complete shift in the stone tool assemblage, away from the flakes and points of the Middle Palaeolithic and into the blade dominated assemblages of the Upper Palaeolithic, characterised by burins, scrapers, notched blades, perforators and awls, suggesting an increased range of activities such as wood and leather working. One element of continuity from level D is the focus on hunting wild goat as the major food source for the cave's inhabitants. A few pieces of obsidian were also found in level C, the earliest stratified obsidian from Southwest Asia, shown to originate from sources in eastern Anatolia (Renfrew *et al.* 1966). These few fragments are the first significant artefactual evidence for long-distance movement of people and/or materials across the highland zone. There are no human or hominin skeletal remains from Shanidar level C, nor indeed from other Upper or Epipalaeolithic sites of the region, with the exception of a single tooth from Warwasi Cave and fragments from Gar Arjeneh and Eshkaft-e Gavi, discussed below.

Material comparable to Shanidar level C has been found at sites within the Iranian Zagros, but with variable evidence for continuity of occupation from the Middle Palaeolithic. In the central Zagros region, the rock shelter of **Warwasi** (Figure 4.9) appears to show some continuity of occupation from Middle to Upper Palaeolithic, at least according to one interpretation of the stone tool assemblages (Olszewski and Dibble 1994; see also Braidwood *et al.* 1961; Olszewski 1993, 2009, 2017; Tsanova 2013; Heydari-Guran 2014). The Upper Palaeolithic faunal assemblage at Warwasi is dominated by onager, with goat, sheep, cattle and hare also present (Turnbull 1975; Uerpmann 1987: 17). Hunting of onager (*Equus hemionus*) seems to have been the major activity of the occupants of the rock shelter, which is well situated for observing passing herds of animals,

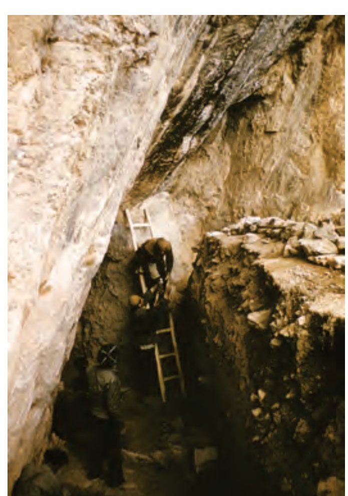

Figure 4.9 Excavation of Warwasi Cave (photo credit: Frank Hole).

which may also have included wild horse (*Equus ferus*) a larger equid than the onager. A find of a hominin tooth amongst the Warwasi animal bone collections in the Field Museum of Natural History in Chicago (Tsanova 2013: 62) may represent the earliest physical anthropological evidence for the presence of modern humans in Iran, as it appears to derive from the Upper Palaeolithic levels of the site, dated by association to *c.* 35,000 BP. In the Bisotun region the cave of **Ghar-i Khar** has a considerable depth of Upper Palaeolithic deposits, again with some suggestion of continuity from the underlying Middle Palaeolithic levels (Young and Smith 1966; Shidrang *et al.* 2016), and with an emphasis on hunting of wild sheep and goat (Hesse 1989). Survey in Kermanshah province detected large numbers of Upper Palaeolithic sites widely distributed across a range of landscape zones (Biglari and Shidrang 2016, 2019; Heydari-Guran and Ghasidian 2020), likely indicative of increased population densities, greater adaptability and more complex food procurement strategies as compared to the Middle Palaeolithic. Upper Palaeolithic levels at **Kaldar Cave** in the southern central Zagros also appear to date to early in the Upper Palaeolithic period and to attest long-term use of the site as a basecamp for hunting of goat, boar, red deer and roe deer (Bazgir *et al.* 2017).

At **Yafteh Cave** (Figures 4.10–4.11) in the Khorramabad region of the south-central Zagros, a blade tool industry was recovered in association with grinding stones, the earliest ground stone tools from the region, probably used for ochre processing (Hole and Flannery 1968; Smith 1986; Otte *et al.* 2007; Bordes and Shidrang 2009; Tsanova 2013; Shidrang 2018). Hearths and bone tools also occur at Yafteh, with radiocarbon dates spanning 36,000 to 25,000 BP (Otte *et al.* 2011). Along with Warwasi rock-shelter, Yafteh Cave is one the key sites of the Upper Palaeolithic in the Zagros mountains in shaping our knowledge on several aspects of Upper Palaeolithic life strategies. The Yafteh cave excavations for the first time yielded considerable evidence of personal ornaments including pierced marine shell beads and perforated vestigial deer canines, bone tools, with frequent use of ochre and other minerals alongside grinding stones throughout the sequence. Such evidence is completely absent in the Middle Palaeolithic of the Zagros, and their presence in the early Upper Palaeolithic may point to considerable cultural differences in the behavioural patterns of the Middle Palaeolithic and Upper Paleolithic hunter–gatherers of the Zagros (Shidrang *et al.* 2020). Hunting activity at this cave was concentrated on small herbivores, and principally wild goats. Based on the faunal spectrum, Yafteh cave may have been surrounded by several ecological niches such as steppe lowlands, piedmont, cooler uplands and forested areas (Mashkour *et al.* 2009).

Figure 4.10 Yafteh Cave, view of cave entrance (photo credit: Frank Hole).

Figure 4.11 Yafteh Cave, Early Upper Palaeolithic ornaments and tools (Shidrang 2018) (image courtesy of Fereidoun Biglari and Sonia Shidrang).

In the same region, the rock shelter site of Pa Sangar contained an Upper Palaeolithic tool assemblage, plus two large marine scallop shells, like the Shanidar obsidian and Yafteh shell beads, indicative of long-distance interaction of some kind between early communities of the region. **Gar Arjeneh** rock shelter has both Middle and Upper Palaeolithic levels but the stratigraphy is too disturbed to allow understanding of the transition between them, although a human premolar and bone fragments appear to come from Upper Palaeolithic levels at this site (Bazgir *et al.* 2014; Trinkaus 2018). Upper Palaeolithic sites were not specifically distinguished during Mortensen's survey of the Hulailan valley (P. Mortensen 1993). On the Mehran plain of the west-central Zagros, in the Kuhdasht region and in western Kermanshah province, many sites appear to belong to the Upper Palaeolithic (Moradi and Bakhtiari 2010; Biglari and Shidrang 2011; Darabi *et al.* 2012).

For the Upper Palaeolithic of the Fars region of the southern Zagros the surveys of Sumner and Rosenberg are key, supported by survey by Dashtizadeh (Rosenberg 2003; Dashtizadeh 2006). Excavations at the cave site of **Eshkaft-e Gavi** (Rosenberg 1985) recovered tool assemblages with affinities to those of the Upper Palaeolithic of the central Zagros but also with some local attributes. Radiocarbon dates centre around 25,000 BP but there is also a suggestion of continuity from the late Middle Palaeolithic and perhaps into the Epipalaeolithic, according to the lithic assemblages and the stratigraphy. The commonest species attested amongst the faunal remains is gazelle, along with sheep, cattle and equid (Zeder 1991: 59). Hominin remains from Eshkaft-e Gavi comprise ten craniodental and postcranial pieces of which several show traces of butchery by humans. A single molar crown is amongst the earliest skeletal evidence for modern humans in Iran (Scott and Marean 2009).

One of the most important Upper Palaeolithic sites of Iran is **Ghar-e Boof Cave** (Figure 4.12) in the Dasht-e Rostam-Basht region of the southern Zagros (Ghasidian *et al.* 2009, 2017; Conard and Ghasidian 2011; Ghasidian 2014; Baines *et al.* 2015), investigated as part of the Tübingen Iranian Stone Age Research Project (TISARP) which has identified multiple Palaeolithic sites (Conard *et al.* 2006, 2007, 2013a; Ghasidian 2014: 209–227; Conard and Zeidi 2019). Radiocarbon and luminescence dates from Ghar-e Boof show Upper Palaeolithic occupation from *c.* 41,000 BP (Becerra-Valdivia *et al.* 2017: Figure 5; Heydari *et al.* 2021), thus from the very start of the Upper Palaeolithic and with plausible continuity from the Middle Palaeolithic, in contrast to the central Zagros. Chipped stone tools from Ghar-e Boof and other contemporary sites of the region include many uniformly-produced bladelets attesting a lithic tradition of the Upper Palaeolithic quite distinctive from the Baradostian lithic assemblages of the northern and west-central Zagros, to the extent that they have been characterised as the "Rostamian" tradition (Ghasidian 2014: 193–207, 253–254; Jayez *et al.* 2019b). The tool-making and tool-using strategies of the human groups occupying these sites indicate their life-styles as highly mobile hunter−gatherer groups, moving from site to site within the region in pursuit of seasonally available prey and keen to minimise time and energy costs in obtaining and working lithic materials (Ghasidian and Heydari-Guran 2018). There are numbers of beads from Ghar-e Boof made from five different species of shell, showing some concern with personal adornment (Conard *et al.* 2013a: 45; Ghasidian 2014: 67–70). Faunal remains reveal a focus on hunting of gazelle, sheep-goat and cattle with exploitation also of game birds (Ghasidian 2014: 66). Charred seed and fruit remains suggest gathering of wild pulses and Poaceae seeds for food and sedges for possible bedding (Baines *et al.* 2015).

Figure 4.12 Excavations in Ghar-e Boof Cave 2006 (photo credit: Nicholas Conard).

Outside the Zagros region, Upper Palaeolithic sites are rare in Iran, probably because of the exceptionally cold and dry climate, but this feature may also be a factor of the distribution of archaeological investigation. On the central plateau close to the city of Kashan, the site of **Sefid-Ab** sheds new light on human occupation of Iran beyond the Zagros (Shidrang 2009). Located close to an ancient spring, Sefid-Ab is an open-air site, in contrast to almost all the known Zagros sites of this period, with a lithic scatter over some 1000 m^2. Tools include blades, bladelets, flakes, burins and cores, comparable to assemblages from Warwasi, Shanidar Cave level C and Yafteh Cave. In the Arisman region of the west-central plateau, many Palaeolithic lithic scatters have been located, including the open-air Upper Palaeolithic site of **Bardia** which has an assemblage with multiple cores and debitage from tool knapping *in situ* (Conard *et al.* 2009; Chegini and Helwing 2011). Some 400 km to the north of Sefid-Ab, the open-air site of **Garm Roud 2** lies on the northern slopes of the Alborz range, 25 km from the Caspian shores (Chevrier *et al.* 2006, 2010; Berillon *et al.* 2007, 2009). Dated to *c.* 35,000 BP, the site yielded a lithic assemblage of bladelets, burins and scrapers, as well as red deer and wild cattle bones with cut marks indicating butchery by humans. There were also traces of a hearth with burning attested on lithics and animal bones. The assemblage from Garm Roud 2 compares well to those of the Zagros Upper Palaeolithic. Surface collection at Delazian and excavations at Mirak on the northern fringes of the Iranian Central Desert recovered large quantities of lithic tools and debitage indicative of Upper Palaeolithic seasonal campsites (Vahdati Nasab *et al.* 2010b, 2019a; Vahdati Nasab and Clark 2014).

Overall, the Upper Palaeolithic evidence from Iran and neighbouring regions is suggestive of a lifestyle involving seasonal movement of hominin groups, almost certainly modern humans, following herds of animals and plant availability over the landscape. They occupied base camps and smaller specialised hunting and butchery sites, almost all of which are in caves and rock shelters. There is marked variation in the hunting focus of hominin groups, with an emphasis on onager at Warwasi, goat at Shanidar, sheep and goat at Ghar-i Khar, and gazelle at Eshkaft-e Gavi, matched by significant regional variability in stone tool assemblages (Ghasidian *et al.* 2017). With their enhanced planning and cognitive capabilities (Abdi 2015a), human communities of the Upper Palaeolithic were broadening their hunting and gathering strategies and intensifying their exploitation of the edible resources around them in an increasing range of environments. Variability in food acquisition and processing, as well as multiple other factors, doubtless underlies the significant spatial and temporal diversity that characterises the stone tool assemblages of the Upper Palaeolithic of Iran. Suggestions that the Upper Palaeolithic communities of the Iranian Zagros can be seen as related, even ancestral, to the European Aurignacian (Otte *et al.* 2007; Olszewski 2009; Tsanova 2013; Otte 2014) have not been widely accepted (Vahdati Nasab 2011: 72; Conard *et al.* 2013a: 45). While all agree on an African origin for the evolution of anatomically modern humans up to 200,000 years ago, followed by an exit from Africa by 60,000 BP at the latest and possibly much earlier (Boivin *et al.* 2013; Groucutt *et al.* 2015), the question of neighbouring source region(s) for the presumably non-Neanderthal hominin groups making stone tools in their regional traditions across Iran in the Upper Palaeolithic remains wide open, with the Caucasus, the Balkans, the Levant, Arabia and Central Asia all considered as possible source regions of human expansion (Shidrang 2014; Ghasidian *et al.* 2017: 43–47).

The Epipalaeolithic, 20,000–12,000 BP

On the Iraqi side of the Zagros, the **Shanidar Cave** evidence is once more indicative of a break in occupation between the Upper Palaeolithic and Epipalaeolithic. Radiocarbon dates suggest a gap between *c.* 26,500 BP and 13,500 BP (Solecki and Solecki 1983; Matthews 2000: 27). The fact that this 13,000-year hiatus overlaps with the LGM argues for climatic and environmental adversity as a factor limiting extensive hominin occupation of the region (Rose 2010: 863). Level B2 at Shanidar Cave yielded typical Epipalaeolithic tool assemblages, with increasing use of microliths, including scalenes, lunates, trapezoids and rectangles with rare fragments of obsidian (Barge *et al.* 2018). There is a massive increase in evidence for edible land snail, *Helix salomonica*, which becomes a significant element of diet for the Epipalaeolithic and into the Early Neolithic of the region.

Other key excavated sites of this period in the Iraqi Zagros include the type-site of **Zarzi Cave** (Figure 4.13) (Garrod 1930; Wahida 1981, 1999; Olszewski 2012; Jayez *et al.* 2019b), a small rock shelter with evidence for broadening of diet to include land snail, river crab and fish as well as hunting of gazelle and sheep/goat. Zarzi stone tools include many microliths developing from non-geometric to geometric (scalene triangles and lunates) from the Early Zarzian (20,000–13,000 BP) to the Late Zarzian (13,000–11,700 BP). Ground stone tools also appear in the Late Zarzian, and there are only two pieces of obsidian from Zarzi, both of which have been identified as originating from the Nemrut Dağ source in eastern Turkey up to 650 km distant from Zarzi by foot (Renfrew *et al.* 1966; Barge *et al.* 2018; Frahm and Tryon 2018). The Shanidar B2 and later Zarzi evidence is corroborated by that from the small cave of **Palegawra** (Braidwood and Howe 1960; Turnbull and Reed 1974; Asouti *et al.* 2020), with classic Epipalaeolithic stone tools, a few pieces of obsidian, simple bone tools, and a few ground stone implements. Amongst the Palegawra fauna, onager are dominant along with red deer, sheep, goat and gazelle. Bird and tortoise bones and extensive deposits of land snail with river crab and clam are all suggestive of an expansion of human diet, the so-called Broad Spectrum Revolution (Flannery 1969; Edwards 1989). Taken together, the evidence from Zarzi, Palegawra and Shanidar B2 suggests that increased use of geometric and microburin lithic tools, presumably for use in hunting and fishing, is associated with an ameliorating climate at the ending of the LGM, as attested by charcoal and pollen evidence from oak, tamarisk, polar and conifers at these sites (Solecki and Leroi-Gourhan 1961; Wahida 1999: 206).

In the Iranian Zagros, several sites show patterns of occupation, diet and manufacture and use of chipped stone tools comparable to those delineated above from the Iraqi evidence, but with more suggestion of occupational continuity (Wahida 1999: 201–204; Peasnall 2002c; Thomalsky 2016). At the cave of **Ghar-i Khar**, habitation appears to continue without break from the Upper to the Epipalaeolithic, with the latter levels showing a major increase in consumption of edible snail, *Helix salomonica* (Reed 1962; Young and Smith 1966). The same pattern is seen at **Warwasi Cave** (Turnbull 1975), with the importance of onager hunting continuing alongside the new fashion for snail consumption, but with the lithic assemblage suggestive of changing types of activities taking place in the cave compared to earlier levels (Olszewski 2017). **Pa Sangar** in the Khorramabad region (Hole and Flannery 1968; Shidrang 2018: 152) also has assemblages which suggest a degree of continuity from the Upper to the Epipalaeolithic, in contrast to the evidence from the Iraqi side of the Zagros.

Survey in the Hulailan valley located 15 sites, including **Mar Gurgalan Sarab**, with materials that Mortensen characterised as "Late Palaeolithic"(Mortensen 1975a, 1993: 165) or "Epipalaeolithic" (Mortensen 2012), most

Figure 4.13 Zarzi Cave, Iraqi Kurdistan (centre) (photo credit: Roger Matthews).

of which appear to have been of Epipalaeolithic type, with blades, bladelets and burins, but a high proportion of flake tools suggests mixing with Middle Palaeolithic materials as well (Conard *et al.* 2013a: 40). Ground stone tools start to appear in this region in the Epipalaeolithic. Sites of the very late period have been detected on the Izeh and Pion plains of north-eastern Khuzestan (Wright 1979; Niknami *et al.* 2009; Jayez 2015). Intensive field survey of these plains identified up to 35 Upper Palaeolithic or Epipalaeolithic sites, including open sites, rock shelters and caves, indicative of significant communities of hunter–gatherers exploiting the rich and varied resources of this region (Jayez *et al.* 2019b).

Epipalaeolithic occupation in the region of Shiraz in the southern Zagros was identified by Field (1951) and Piperno (1974), in particular at the large cave site of **Eshkaft-e Ghad-e Barm-e Shur**. The assemblage includes rather small tools such as burins, blades and scrapers struck from chert pebbles, all arguably of Epipalaeolithic date but with some possible Upper Palaeolithic components (Conard *et al.* 2013a: 41). Rosenberg's work at the **KMC Cave** in the Kur river basin region of Fars also recovered material of Epipalaeolithic type, including geometric microliths (Rosenberg 2003), supported by the more recent work of Dashtizadeh (2006). Rosenberg (2003) argues that the KMC Cave became the dominant site of the western Marvdasht in the Epipalaeolithic. The lithic assemblage from KMC includes large numbers of all the known Epipalaeolithic types of the region, in contrast to other identified contemporary sites, suggesting that KMC served as a regional centre for human activity across the plain and beyond. Known Upper Palaeolithic sites within 25 km of KMC were abandoned at this time, supporting Rosenberg's interpretation of "a shift from a circulating to a radiating resource exploitation system" (Rosenberg 2003: 108). Complexes of Epipalaeolithic rock shelter and cave sites are also known from the Basht and Kohgiluyeh regions of the south-western Zagros (Ghasidian *et al.* 2009; Azadi 2017).

Japanese-Iranian investigations in the Arsanjan and Tang-e Bolaghi regions of the southern Zagros have shed new light on the Epipalaeolithic-Neolithic transition in this region (Tsuneki *et al.* 2007; Tsuneki and Zeidi 2008; Tsuneki 2013). The site of **Haji Bahrami Cave** (also known as TB75) includes layers of Epipalaeolithic type with similarities to lithics recovered from the KMC Cave site in the Kur river basin as well as to Zarzian assemblages in the central Zagros as at Warwasi Cave. Radiocarbon dates indicate Epipalaeolithic occupation spanning *c.* 20,000 to 14,000 BP (Tsuneki 2013: 90) with probable continuity into Early Neolithic levels. Faunal remains indicate hunting of cattle, gazelle, sheep and goats with increasing emphasis on sheep/goat at the transition to the Early Neolithic (Hongo and Mashkour 2008). In the Arsanjan region, Epipalaeolithic lithic assemblages were recovered from no fewer than 67 cave and rock shelter sites (Tsuneki 2013: 92), vivid indication of the ability of intensive survey methods to amplify our evidential base. These sites, with their lithics and faunal assemblages, have great potential for aiding our understanding of the transition from the Epipalaeolithic into the Early Neolithic, as further discussed in Chapter 5.

In northern Iran, on the shores of the Caspian Sea, Coon's excavations at the rock shelter and cave sites of **Ghar-i Kamarband** (Belt Cave) and **Hotu** (Figure 4.14) recovered deeply stratified lithic assemblages of Epipalaeolithic date and evidence for intensive hunting of seals (Coon 1951, 1952; Coolidge 2010). McBurney's investigations of the nearby rock shelter site of **Ali Tappeh** revealed striking alterations in the main diet component between gazelles and seals, probably connected to Late Glacial and Post Glacial changes in local steppe/forest vegetation and Caspian Sea levels (McBurney 1968; Uerpmann and Frey 1981; Coolidge 2010; Vahdati Nasab

Figure 4.14 Hotu Cave, 2021 excavations (photo credit: Hassan Fazeli Nashli).

et al. 2019b: 295). Study of bone and shell artefacts from Ali Tappeh shows technological parallels with finds from Epipalaeolithic sites in the Caucasus (Manca *et al.* 2018). Work at **Komishan Cave** has refined understanding of the lithic assemblages of all these sites, showing connections with sites in Georgia, Azerbaijan and eastern Turkey and characterised as a "Caspian Mesolithic" (Vahdati Nasab *et al.* 2011; Jayez and Vahdati Nasab 2016; Thomalsky 2016). Three perforated canid canines from Komishan, comparable to examples found at Kamarband and Ali Tappeh, represent some of the earliest items of artistic adornment from Iran, dating to the very end of the Epipalaeolithic phase. Faunal remains from Komishan include gazelle and pig as well as a range of smaller species such as birds, fish and molluscs (Mashkour *et al.* 2010). Along with other sites on the eastern shores of the Caspian in Turkmenistan, the caves of Kamarband, Hotu, Komishan and Ali Tappeh probably represent long-term occupations by small groups of humans engaged in intensive spells of hunting and fishing.

Epipalaeolithic sites have also been found during survey in Gilan province along the Sefid Rud river to the southwest of the Caspian shores (Adachi 2004; Biglari and Jahani 2011), and there is evidence for significant Epipalaeolithic presence at several sites along the northern and western fringes of the Iranian central plateau, including Delazian, Chah-e Jam, Soofi-Abad and Bardia (Vahdati Nasab *et al.* 2019b: 293–295). Epipalaeolithic site finds from southern and eastern Iran have so far been extremely rare (Parizi *et al.* 2014), which may be at least partly due to a lack of targeted fieldwork.

The end of the Palaeolithic in Iran: creating human communities

In closing this chapter, we can draw some general conclusions concerning the Upper and Epipalaeolithic of Iran. Firstly, there is a marked episode of apparent abandonment of much of Iran by human or hominin groups during the Late Glacial Maximum, at least between *c.* 26,000 and 20,000 BP and possibly much longer. This abandonment was clearly part of a wider picture of severe reduction of human presence across the Old World, as attested in the absence of sites of this period across Turkey and Greece (Düring 2011: 31) and all of Central Asia (Coolidge 2010: 54). There can be no doubt that this human hiatus is directly connected to climatic and environmental adversity attendant upon the coolness and aridity of the Late Glacial Maximum.

Secondly, once human groups do reappear in the Epipalaeolithic, initially from *c.* 20,000 BP but more intensively from *c.* 15,000 BP, there is a notable shift in the dietary patterns attested in the material evidence from multiple sites. One element of this shift is the increased diversity in exploitation of specific large game animals, a trend that began in the Upper Palaeolithic as we have seen. Another element is the broadening of the subsistence base to include new components such as fish, river crabs, small game and land snails, as well as seals and migratory birds in the Caspian region. In a highly influential short article, Flannery (1969; Edwards 1989) called this shift the Broad Spectrum Revolution (BSR), set within a context of population overflow from resource rich regions into more marginal zones. Stiner (1993, 2001) has argued that a focus on small game may have resulted from over-exploitation by human groups of large and medium-sized prey. In her interpretation, framed within optimal foraging theory, humans had become too successful at hunting animals such as onager, gazelle, sheep and goat and were perforce obliged to look to smaller game such as rodents, birds, land snails and fish to provide their sustenance.

As Zeder (2012: 242) has explored, however, the notion of the BSR and associated developments in studies of impacts of population growth (Cohen 1977) and optimal foraging theory tend to "portray humans in a one-way adaptive framework in which they scramble to respond to the negative impact of deteriorating climate or unbridled population growth." Within a framework of niche construction theory, Zeder articulates "alternative perspectives… that portray humans as actively modifying environments to meet fundamental economic and social goals," thus accrediting agency and innovation to early human societies. In Zeder's persuasive argument, the BSR took place within resource rich environments, rather than marginal zones, where people took maximum advantage of a breadth of environmental opportunities including those afforded by the warmer, wetter conditions of the Bølling-Allerød interstadial, *c.* 15,000–13,000 BP. Certainly, the Upper Palaeolithic and Epipalaeolithic evidence from the eastern Fertile Crescent, including Iran, does not support the notion of overpopulation or population pressure on resources during these periods, far from it. Nor are there indications of significant climatic downturn or environmental adversity during the Epipalaeolithic, at least until the onset of the Younger Dryas from *c.* 13,000 BP. Another factor in the broadening of diet at this time may have been the invention and dissemination of new hunting technologies such as spear throwers and bow and arrows, further indications of human ingenuity in shaping their own trajectories of behaviour and environmental engagement.

Thirdly, the material culture of the communities of the Epipalaeolithic shows significant changes from earlier periods (Olszewski 2012). Major features of this shift include the use of new materials such as bone and shell alongside the traditional cherts and flints for tool manufacture, and the development of a nascent ground stone technology for mineral and plant processing. It is highly likely that there were also significant developments in technologies of organic materials such as wood and fibres, although we lack the archaeological evidence in that regard. Access to and exploitation of materials coming from outside home regions, such as obsidian and seashell, is an indication that human communities were engaging across large distances in order to acquire desired materials, even if the precise mechanisms of this connectivity remain difficult to articulate. The use of material culture in adorning the human body, through beads and pendants, is also a new feature of the Upper Palaeolithic, suggesting a developed concern with social identity within and between human groups.

Fourthly, there are further indications of developments in social structures by the Epipalaeolithic. We have seen Rosenberg's idea (2003) that the KMC Cave grew to become a regional centre for human activity during this period, and there are indications of increasing specialisation in technologies such as tool manufacture and use. The increasing weight and diversity of material culture may itself have been a factor in engaging human groups with their physical surroundings in multiple senses, arguably leading to a more developed sense of attachment to place and to material objects and identities. All these factors, and doubtless many others, were instrumental in shaping the trajectories of human communities during the Upper Palaeolithic and Epipalaeolithic. A notable contrast to the Middle Palaeolithic appears to be the predilection of Upper Palaeolithic communities for occupation of cave and rock shelter sites as opposed to open-air sites, but this feature may be a result of survey methodologies as much as a genuine attribute.

With regard to the social structure of Upper Palaeolithic and Epipalaeolithic hunter–gatherer groups, studies drawing on evidence from contemporary hunter–gatherer groups stress the special nature of human social lifeways, characterised by the prevalence of allomaternal child-care and extensive cooperation and sharing in all aspects of food acquisition, processing and consumption (Kelly 2013). These attributes underpin the development of frequent interactions within and between human groups, in turn stimulating cognitive and social developments that encourage the growth of sophisticated social learning mechanisms (Hill *et al.* 2011).

Above all, we should refrain from viewing the highly developed hunter–forager groups of the Upper and Epipalaeolithic of Iran principally as communities on the verge of becoming Neolithic, as discussed in the following chapter. Rather, we should view them as the climax of a millennia-old way of life, involving intimate connection with the landscape and its resources in innovative and long-term sustainable modes of interaction. Finally, with regard to Iran specifically, we end with an agenda-setting quote from one of the most active and thoughtful Iranian Palaeolithic archaeologists:

> Although new discoveries of Paleolithic sites look very promising, much remains to be done to get a picture of site distributions in time and space for the Iranian Plateau (indeed, for the nation as a whole) as a necessary prelude to the behavioral interpretation that should be the goal of a paleoanthropologically informed archaeology.
> (Vahdati Nasab *et al.* 2013a: 279)

5 Domesticating Iran: the Neolithic period, 10,000–5200 BC

Iran in the Neolithic Transition

The significance of Iran in the broad sweep of developments encapsulated in Gordon Childe's striking phrase "Neolithic Revolution" is immense, and increasingly recognised as such by the global community who research this critical episode of human history. In this chapter, we examine the evermore detailed evidence from Iran in the light of key issues and topics centring on what might best be called the Neolithic Transition. Major components of this episode across Southwest Asia and beyond include the changing climatic and environmental context of the Late Pleistocene-Early Holocene transition, intensified relationships between humans, plants and animals involving the development of sophisticated modes of production, storage, preparation and consumption of foodstuffs, in turn facilitating both a major shift in the settlement habits and demography of human communities (Bocquet-Appel 2002, 2008), and an enhanced capacity for increased social inequality within and between those communities (Bogaard *et al.* 2018). All these elements underpin the way almost all human communities live today across our planet.

As a globally significant socio-cultural phenomenon, the Neolithic Transition has provided a fertile research arena for the development and application of a rich range of theoretical, analytical and discursive frameworks (Mithen 2003; Bellwood 2005; Barker 2006 are some of the many global overviews and interpretations; see also Matthews 2003a: 67–92). In the case of Iran, as we shall see, we are concerned with two major socio-cultural processes that together form the Neolithic Transition. Firstly, there is convincing evidence that some human communities in Iran, certainly in the central Zagros region and possibly elsewhere, worked through the transition from mobile hunter–gatherer to settled farmer–herder essentially by themselves, without significant external influence. We can characterise this process as pristine Neolithisation in a "formative zone" (Özdoğan 2005), one of many across the Fertile Crescent (Ibáñez *et al.* 2018). Secondly, some human communities became Neolithic in their behaviours by learning to be so, under duress or otherwise, from others who had already made that transition. There is also considerable evidence for this secondary spread of Neolithic practices across Iran. Each of these two processes needs articulating and analysing on their own terms (Fazeli Nashli and Matthews 2013: 2–6).

Recent studies have focused on the "ratchet" nature of the Neolithic Transition whereby once certain steps have been taken it becomes impossible or extremely difficult for them to be reversed, as human communities become "entangled" in increasingly complex relationships with the plants, animals, materials, objects, ideas and practices that make up their worlds (Hodder 2012; Lewis and Maslin 2018: 113–146). Thus, once humans had selected plants and animals for intensified engagement it became possible for them to settle more permanently in attractive locations, in turn leading to their ability to produce more offspring due to the more reliable and more energy-rich food supply and the end of the need to carry children around. "At this point the ratchet is complete. Even if farming entails tedious work with the reward being monotonous food, you must do it for the sake of the children…And anyway, more children means more workers for the fields" (Lewis and Maslin 2018: 121). As plants and animals become more adapted to intensive human exploitation, they require ever more attention in the way of soil preparation, cultivation, weeding, nurturing, penning, herding, foddering and birthing, which in turn leads to higher yields capable of supporting more and more people. The closer spacing of human births enabled by sedentarisation more than compensates for the high infant mortality attendant on poor diet, malnutrition and the spread of new diseases (Bocquet-Appel 2011), so that yet more people survive and must be fed. There is no easy way out of these self-reinforcing cycles of entanglement. At the same time, the capacities of human communities, along with their plant and animal partners, for ecological transformation of their surrounding worlds through "niche construction" were massively augmented through the Neolithic Transition (Zeder 2012; Boivin *et al.* 2016; Weninger 2017). Intensified usage of land, including clearance and tillage, range expansion of herded

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animals such as goat, sheep, cattle and pig, as well as dispersal of newly evolving pathogens affecting humans, animals and plants, all played their part in dramatically reshaping the world wherever agriculture spread.

Within this broader context, major issues of the Neolithic Transition to which the Iranian evidence speaks include: human interactions with climatic and environmental changes through the Early Holocene; intensified exploitation of certain species of plants and animals leading in due course to full domestication; transitions from seasonal mobility to year-round sedentism; elaboration of social and ritual activity, including human burial practices; modes and means of the diffusion of Neolithic life-ways across the land of Iran and beyond; and the chronology of Neolithic developments. The excavated evidence from Iran is of relevance to all the above issues (Bernbeck 2001, 2004; Peasnall 2002a; Hole 2004; Matthews and Fazeli Nashli 2013; Weeks 2013a; Helwing 2014; Darabi 2015; Roustaei and Mashkour 2016; Helwing and Fazeli Nashli 2017).

Researching the Iranian Neolithic

The first significant steps in researching the Neolithic of Iran were taken with the problem-oriented research of Braidwood and colleagues in the 1950s, investigating the origins of food production and village life through excavations at Asiab and Sarab in the high Zagros of western Iran (Braidwood and Howe 1960; Braidwood 1961). Braidwood believed that the origins of farming should be sought in a region hosting the wild ancestors of later domesticated plants and animals, and the hills, mountains and high plains of the Zagros appeared to fit what became known as "the hilly flanks theory." Braidwood's work in Iran, although never fully published (unlike his earlier work on the same set of problems in the Iraqi Zagros: Braidwood *et al.* 1983), set the standard for future work, and he was followed by Hole and Flannery's systematic programme of investigation into the prehistory of the Deh Luran plain in the south-central Zagros, including excavation of Neolithic levels at Ali Kosh and Chagha Sefid (Hole and Flannery 1968; Hole *et al.* 1969; Hole 1977, 1987c). Amongst its many scientific achievements, including an impressive publication record, this project was notable for employing the first flotation machine in Southwest Asia (Helbaek 1969), generating new forms of evidence for ancient diet and environment, and material for radiocarbon dating, which remain critical in approaching the Neolithic Transition.

Through the Golden Age of Iranian archaeology, 1959–1979 (Chapter 3), several projects investigated issues of Neolithic Iran. A Danish team under Thrane surveyed the Hulailan valley in Luristan, excavating the Neolithic site of Guran (Meldgaard *et al.* 1963, 1964; Mortensen 1975b, 2014), while a Canadian team under Smith excavated the Early Neolithic site of Ganj Dareh near Kermanshah (Smith 1990). Japanese archaeologists led by Egami and Fukai excavated Neolithic and later sites in Fars (Egami 1967; Fukai *et al.* 1973; Weeks *et al.* 2006) and, as a component of the Hasanlu project, Voigt excavated Hajji Firuz in the Solduz valley of northwest Iran (Voigt 1983). Smaller-scale work was conducted by Hole at Tula'i (Hole 1974) and by Pullar at Abdul Hosein (Pullar 1990), while Masuda directed a Japanese team excavating at Sang-e Chakhmaq in northeast Iran (Masuda 1974; Masuda *et al.* 2013; Thornton 2013a). In southwest Iran, work directed by Delougaz and Kantor investigated Neolithic levels at Chogha Mish and Chogha Bonut (Delougaz *et al.* 1996; Alizadeh 2003a).

During the hiatus in new fieldwork in Iran from 1979, researchers conducted a considerable amount of research into Iranian Neolithic materials excavated in the 1950s–1970s, and that has continued until today. Major advances have taken place in our understanding of areas such as chronology (Hole 1987c; Voigt and Dyson 1992), archaeozoology (Hesse 1984; Hole 1996; Zeder 1999, 2006a; Zeder and Hesse 2000), archaeobotany (Miller 2003; Charles 2007), lithics (Kozlowski 1999), figurines (Voigt 2000; Daems 2001, 2004, 2008), burial practices (Solecki *et al.* 2004; Croucher 2012) and other elements of Neolithic material culture and society, generally situating the Iranian evidence within broader geographical contexts (Kozlowski and Aurenche 2005).

As in other fields of Iranian archaeology, the study of the Neolithic of Iran has been revitalised since 2001(Darabi 2015). Some of the impetus has come from rescue archaeology in advance of dam construction, such as the Seimarreh river project in the central Zagros where the Early Neolithic site of East Chia Sabz has been excavated by Iranian archaeologists led by Darabi (Darabi *et al.* 2011, 2013). In the Sivand dam project of the southern Zagros, Japanese and Iranian archaeologists, led by Tsuneki and Zeidi, explored caves and rock shelter sites spanning the transition from Epipalaeolithic to Early Neolithic (Tsuneki *et al.* 2007; Tsuneki and Zeidi 2008; Tsuneki 2013). Iranian work directed by Fazeli Nashli, in collaboration with British and other colleagues, on the Qazvin and Tehran plains and at Sialk on the central plateau has situated Neolithic developments within long-term trajectories of socio-economic change (Fazeli *et al.* 2004; Fazeli Nashli *et al.* 2009, 2011, 2013a). In the Fars region, excavations at Tol-e Bashi by Pollock, Bernbeck and Abdi (Abdi *et al.* 2003; Pollock *et al.* 2010), and in the Mamasani region by Potts and Roustaei and colleagues (Potts and Roustaei 2006; Weeks *et al.* 2006; Weeks 2013c), have begun to elucidate the Neolithic of this region. The work of Hasan Rezvani, Kourosh Roustaei and colleagues in north-eastern Iran (Roustaei *et al.* 2015; Roustaei 2016a, 2016b; Roustaei and Gratuze 2020), in particular, has significantly amplified our understanding of the Neolithic of this region, while Hojjat Darabi's surveys, excavations and publications on the earliest Neolithic of the central Zagros have strengthened the claim of this region to be a key zone of Neolithic innovation (Darabi 2015, 2016).

The earliest Neolithic of Iran was explored through joint Iranian-British excavations at Sheikh-e Abad and Jani in the central Zagros, directed by Matthews, Matthews and Mohammadifar (Matthews *et al.* 2010, 2013a; W. Matthews *et al.* 2019). Multiple regional surveys, mostly by Iranian archaeologists, have begun to investigate Neolithic issues across the breadth of Iran (Chapter 3; Azarnoush and Helwing 2005). Recent and ongoing research into the Neolithic of Iran is brought together in multi-author volumes (Matthews and Fazeli Nashli 2013; Roustaei and Mashkour 2016) and in overview books and articles (Weeks 2013a; Helwing and Aliyev 2014; Darabi 2015), vividly illustrating the health of research into this broad set of topics, with Iranian archaeologists in the vanguard. It is important to stress, however, that very few excavated Neolithic sites in Iran have been subject to the application of a full range of modern scientific techniques, including radiocarbon dating, so that in-depth analysis and interregional comparison has to be provisional and incomplete as things stand. The distribution of Neolithic sites in Iran and adjacent regions is shown in Figure 5.1.

While in recent decades researchers have constructed and applied multiple theoretical frameworks to the study of the Neolithic Transition in Southwest Asia and elsewhere, incorporating a range of factors including

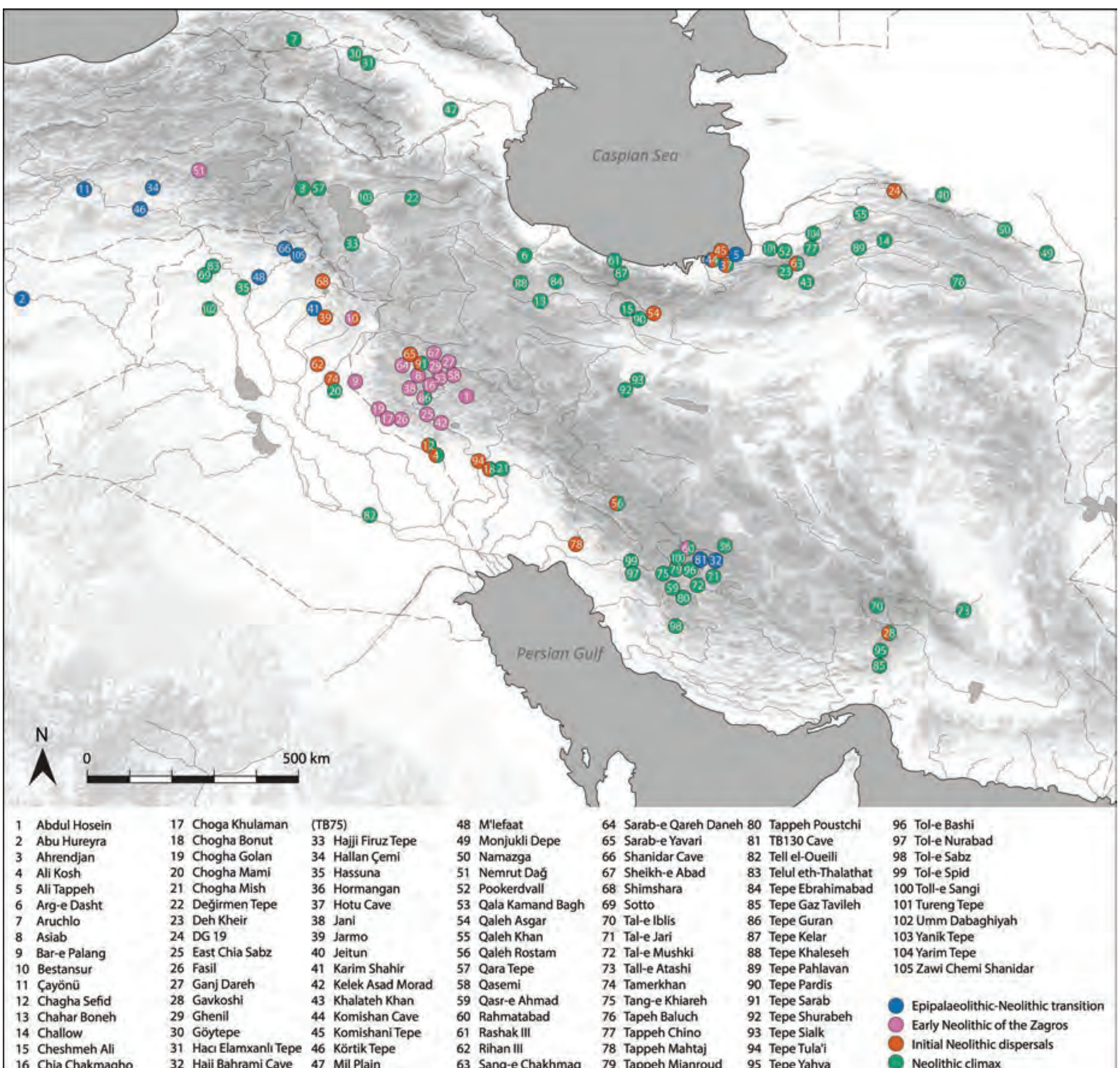

Figure 5.1 Neolithic sites of Iran by period.

environmental change, population growth, societal and ideological development and multi-causal elements, it is fair to say that the evidence from Iran has featured too rarely in such debates (Matthews and Fazeli Nashli 2013). As a source area for major Neolithic transitions, Iran is critical to understanding how human communities worked through a dramatic episode of change that culminated in a fundamental transformation in human societies as well as in the plant, animal and environmental worlds that accompanied them on this journey. It is increasingly recognised that the Neolithic Transition in Southwest Asia cannot be meaningfully explained on the basis of single overarching theories, but rather that each region needs detailed, inter-disciplinary investigation to articulate the trajectories of change and continuity specific to each region, even to each site within regions (Zeder 2006b; Asouti and Fuller 2013; Asouti 2017). At the same time, it is important that we do not abandon discussion of broader themes, factors and connections that may articulate conceptual frameworks within which to interpret the ultimately dramatic suite of developments encapsulated with the Neolithic Transition (Weninger 2017). The ever-increasing evidence from Iran is vital in providing a kaleidoscopic picture of diversity and connectivity spanning all stages and episodes within the great transition from mobile hunter–gatherer to settled farmer–herder, as we will now begin to explore.

Neolithic terminology and chronology

The start of the Neolithic in Southwest Asia is generally seen as coinciding with the end of the Younger Dryas at *c.* 9600 BC (Watkins 2009: 201). We are reluctant to use the value-laden term "Proto-Neolithic," which has been applied to the period *c.* 11,000–8300 BC (Solecki *et al.* 2004), covering the transition from the Pleistocene to the Holocene. For the Iranian Neolithic, it seems most straightforward to apply the term Early Neolithic to the span 10,000–7000 BC and Later Neolithic to the span 7000–5200 BC. Early Neolithic approximately corresponds to Aceramic or Pre-Pottery Neolithic and Later Neolithic to Ceramic or Pottery Neolithic (Hole 1987c; Voigt and Dyson 1992). We also need to take account of several sites that sit right on the boundary between the Epipalaeolithic and the Early Neolithic, such as Shanidar Cave level B1, Zawi Chemi Shanidar and Karim Shahir, all on the Iraqi side of the Zagros range (Matthews 2000: 31–35).

The absolute chronology of the Iranian Neolithic needs much further input from systematic application of a modern radiocarbon dating programme, expanding work already undertaken by Zeder (Voigt 1987; Voigt and Dyson 1992; Zeder 2006a; Marshall 2012; Pollard *et al.* 2012, 2013; Matthews *et al.* 2013c). For now, most available Neolithic dates for Iran and adjacent regions can be viewed at the Radiocarbon Context Database (http://context-database.uni-koeln.de/intro.php) and the Platform for Neolithic Radiocarbon Dates (http://www.ex-oriente.org/associated_projects/ppnd.php). Figure 5.2 shows the chronological relationships of Neolithic sites in Iran, with reference also to neighbouring regions, while Figure 5.3 shows relevant radiocarbon dates from selected key sites. All dates in this book from here on are given as calibrated BC, whenever possible.

Human–environment interactions in the Neolithic

As we saw in the preceding chapter, there is good evidence for significant variation in climate and environment through the Late Pleistocene and Early Holocene, with the steady easing over many millennia of the Late Glacial Maximum, interrupted by the Younger Dryas. There has been much discussion regarding the possible nature of the interrelationships between climate, environment and human societies through the course of the Neolithic of Southwest Asia (H. E. Wright 1980; Weninger *et al.* 2006, 2009; Jones and Roberts 2008; Wasylikowa and Witkowski 2008; Gronenborn 2009; Kehl 2009; Walker and Fattahi 2011; Jones 2013; Jones *et al.* 2013; W. Matthews 2013a; W. Matthews *et al.* 2013c; Asouti and Kabukcu 2014; Sharifi *et al.* 2015, 2018; Biehl and Nieuwenhuyse 2016; Asouti 2017). Lake core records from Zeribar (Figure 5.4), Hashilan, Mirabad and Urmia, loess soil sequences from northern Iran and alluvial fan deposits in eastern Iran agree in indicating a shift from *c.* 13,000 BC to a warmer, wetter climate, the Bølling-Allerød Interstadial, which gradually facilitated the spread of grasses and trees into upland, steppe and desert-steppe regions.

This long-term warmer/wetter trend was interrupted by the climatic episode known as the Younger Dryas, *c.* 10,600–9600 BC, which saw a return to cold and dry conditions and a re-establishment of *Artemesia*-Chenopodiaceae steppe across the entire region and beyond (Smith *et al.* 1997; Roberts 1998: 70–71; Alley 2000; Snyder *et al.* 2001; Wasylikowa 2005; Robinson *et al.* 2006; Aubert *et al.* 2019). The conditions of the Younger Dryas would have had a significant impact on the range of zones in the high Zagros suitable for human habitation (Hole 1996; Darabi 2015), even if it is now clear that the region was not deserted for the duration of the Younger Dryas. In other regions of Iran, such as the Caspian Sea shores and adjacent plains, it seems that disruption to human occupation would have been minimal as attested by suggestions of Epipalaeolithic-Neolithic continuity

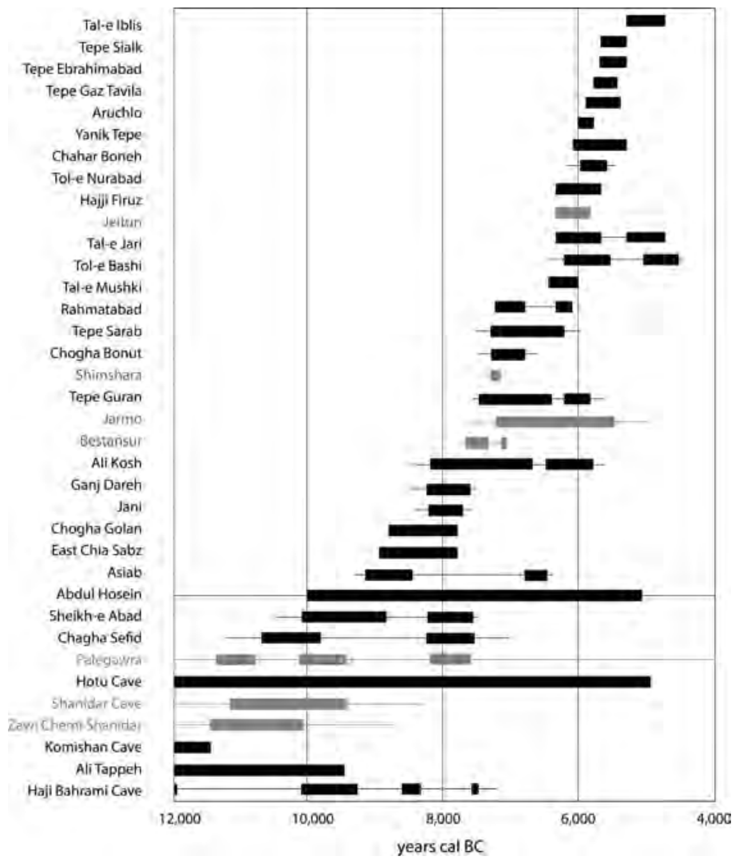

Figure 5.2 Chronology of the Neolithic of Iran and neighbouring regions.

of occupation in cave sites of this region (Gregg and Thornton 2012; Jayez and Vahdati Nasab 2016; Leroy *et al.* 2019). It has been argued that the environmental constraints of the Younger Dryas were influential in encouraging human groups to intensify cultivation of available food resources, for example in the face of decreasing wild cereal returns, which can be seen as early steps towards an agriculture lifestyle (Weiss 2000). While this model appears to work for the western Fertile Crescent in the Levant (Bar-Yosef 1998, 2011), it has less applicability to the eastern wing of the Fertile Crescent, including the Zagros region of western Iran and eastern Iraq, as it appears that Early Holocene communities here were not heavily dependent on wild cereals as a food resource but rather they made use of wild goat and legumes, fruits and nuts (Arranz-Otaegui *et al.* 2016; Riehl 2016) as their major sources of sustenance, and these resources were less directly impacted by the conditions of the Younger Dryas. Increasing evidence for human presence in the Zagros during the Younger Dryas (Matthews *et al.* 2013b) supports this interpretation.

From *c.* 9500 BC, lake sediment core evidence indicates the expansion of grasses, almond and pistachio trees across the Zagros, peaking at *c.* 8500 BC and enabled by an increase in precipitation in particular during the period 8000–6000 BC (Araus *et al.* 2014), followed by a much slower spread of oak forest, not peaking until *c.* 4000 BC (Stevens *et al.* 2001; Stevens *et al.* 2006; Djamali *et al.* 2010; Jones *et al.* 2013: 27). Roberts (2002) has argued for significant human impact in slowing the spread of oak across the Zagros and other regions of Southwest Asia through deliberate forest clearance, burning, and overgrazing by early domesticated animals such as goat, while Asouti and Kabukcu (2014: 178) propose that oak-dominated steppe-forests of the Zagros-Taurus uplands "represent an anthropogenic vegetation type that evolved gradually during the first half of the Holocene in response to people-vegetation interactions of increasing complexity and intensity." Increased presence of charred grass awns and micro-charcoal in Lake Zeribar sediments around 10,000 BC suggests frequent burning of land around the lake, possibly human-induced (Wasylikowa *et al.* 2006). Survey evidence for extensive human occupation of the Marivan region, in which Lake Zeribar is situated, from the Palaeolithic through Neolithic periods and beyond (Mohammadifar and Motarjem 2008) provides a possible long-term context for such activity.

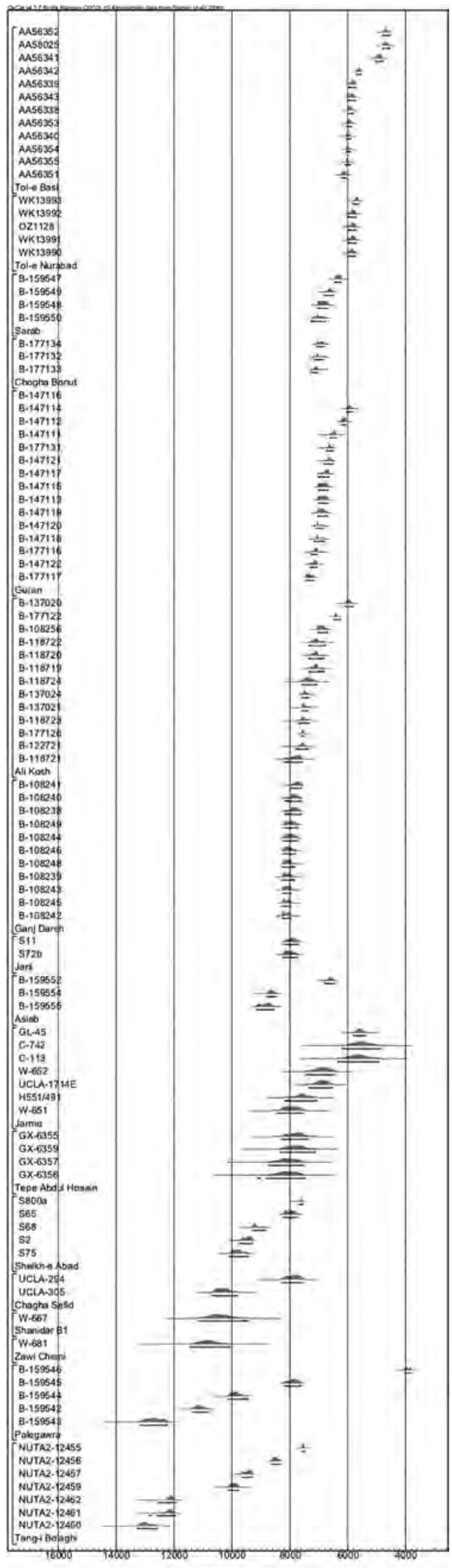

Figure 5.3 Chart of Neolithic 14C dates from selected key sites.

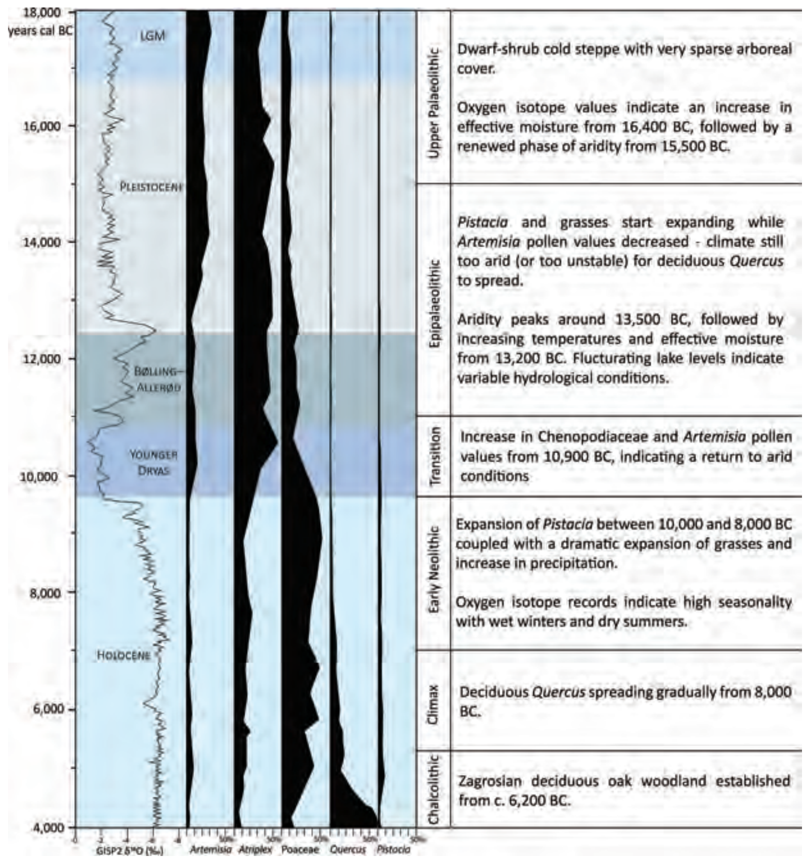

Figure 5.4 Summary of Lake Zeribar climatic indicators, *c.* 28,000 cal BP –6900 cal BP (after Asouti *et al.* 2020: Figure 4).

Following the end of the Younger Dryas, the global climate remained subject to fluctuations caused partly by so-called meltwater pulses, the sudden and massive release of cold freshwater from glacial lakes into the North Atlantic, and by shifts in polar-continental airflows. The dominance in Iran's climatic regime of westerly winds combined with Iran's location directly east of the Arabian Peninsula, the largest dust source on our planet, makes Iranian ecosystems especially prone to changes in dust deposition. Deep-time analyses of dust from sediment cores shows a high correlation of dust with sudden cooling events (Safaierad *et al.* 2020). There appear to have been at least six of these global cooling anomalies or "Rapid Climate Change" events through the Holocene (Mayewski *et al.* 2004). There is some evidence for a short episode of climatic instability at 10.2ka BP (*c.* 8200 BC) that may have impacted on socio-cultural development at least in the western Fertile Crescent (Weninger *et al.* 2009; Borrell *et al.* 2015; Weninger 2017). Another of these events is detectable in ten different palaeoclimate records dated to 9.2 ka BP (*c.* 7200 BC) and lasting for 150–200 years, with the effect of significantly reduced temperatures and rainfall (Fleitmann *et al.* 2008; Jones *et al.* 2019). This event coincides at least approximately with a break in the Neolithic occupation of Iran, which is not to suggest direct causality. Very few sites show occupation spanning the Early to Later Neolithic, and many sites were abandoned in the later eighth millennium BC, including Sheikh-e Abad, Ganj Dareh, Abdul Hosein, East Chia Sabz and possibly Guran, all in the Iranian Zagros, and also Bestansur and Shimshara in the lower Iraqi Zagros (Flohr *et al.* 2020). At about the same time, occupation starts at a host of new sites on the lower plains, including Ali Kosh, Chogha Bonut and Chagha Sefid, as well as Jarmo in the foothills of the Iraqi Zagros (Matthews *et al.* 2013b: 233). The mega-site of Çatalhöyük in central Turkey is also founded at about this time. One scenario is that the 9.2ka BP event was severe enough to lead to the collapse of agricultural and social systems in the high Zagros while encouraging the spread of Neolithic communities into lowland zones where the cooler, drier conditions had less impact, but this interpretation needs more input from detailed local climate records and significant refinement of the chronology.

A further climatic change of potentially major importance to the Neolithic of Iran is the so-called 8.2ka BP event, which lasted from *c.* 6400 to 6000 BC and, like the Younger Dryas and 9.2ka BP event, was marked by abrupt cooling and aridity across much of the world (Alley *et al.* 1997; Weiss 2000; Weninger *et al.* 2006, 2009).

The Neolithic in Iran was highly developed by the later seventh millennium BC, by which time human communities had been herding animals and cultivating crops for several millennia, as well as developing sophisticated resilience strategies involving resource diversification and storage, which may well have protected them from the worst impacts of these cooling events (Clare and Weninger 2010; Flohr *et al.* 2016; Ghahremaninejad *et al.* 2021). Perhaps the most persuasive evidence for significant human behavioural adaptation to the impacts of the 8.2ka BP event comes from the Fars region of south-western Iran where at sites such as Tal-e Mushki and Hormangan a shift from cultivation to hunting is vividly attested in both the faunal and the stone tool assemblages at *c.* 6200–6000 BC (see below; Abe and Khanipour 2019). From *c.* 4000 BC the climate of the Zagros region, and indeed across Iran, has been broadly similar to that of today although not without significant fluctuations in temperature, rainfall and wind regimes (Kehl 2009: 10; Sharifi *et al.* 2015).

The Epipalaeolithic-Neolithic transition, 11,000–9800 BC

Before addressing the full Neolithic period, we need to consider a suite of important early sites on the Iraqi side of the Zagros range as they inform us on the vital centuries spanning the transition from the Late Pleistocene to the Early Holocene, which is also the transition from the Epipalaeolithic to the Early Neolithic (Peasnall 2002b; Darabi 2015: 22–28). The sites in question include Shanidar Cave level B1, Zawi Chemi Shanidar and Karim Shahir, all of the so-called Proto-Neolithic period (Solecki *et al.* 2004). In the last chapter we saw that human communities were developing in a range of ways through the Upper and Epipalaeolithic, with evidence for increasing material and social sophistication by the last millennia of the Epipalaeolithic.

The Iraqi sites of Shanidar Cave B1, Zawi Chemi Shanidar and Karim Shahir have been well published and we look only briefly at them here (for summary and references see Hole 1987a; Matthews 2000: 31–35; Solecki *et al.* 2004; Matthews *et al.* 2013d). These sites are all in the lower Zagros and so far we have no evidence of occupation in the high Zagros between *c.* 13,000 and 10,000 BC, an apparent absence that may be due to climatic severity or to lack of intensive field survey over the region. At **Shanidar Cave** level B1 we have a unique cemetery of this period, with some 35 individuals in graves dug into ashy deposits (Solecki *et al.* 2004), tentatively dated to *c.* 10,500 BC, firmly in the Younger Dryas period. Many of the graves have beads and traces of red pigment as well as bone and stone tools, and there is a major increase over previous periods in the use of ground stone tools, including querns, rubbers, mortars and incised pebbles. Elongation of two of the skulls suggests deliberate cranial modification through head binding (Lorentz 2010: 134). The inhabitants of the cave hunted wild goat, sheep and red deer and consumed large quantities of smaller items such as land snail and crab. Bone isotope analysis indicates that the Shanidar B1 humans enjoyed a diet rich in plant intake and relatively poor in meat consumption (Solecki *et al.* 2004: 181), which may indicate largely winter occupation of the cave when hunting opportunities were reduced.

This evidence for seasonality ties in well with the nearby open-air site of **Zawi Chemi Shanidar** (Solecki 1981), which dates to *c.* 11,000–10,400 BC. Here we have an oval floored structure, the earliest "building" known from the Zagros region, constructed of unworked stone plus many examples of broken and complete ground stone tools. Outside this structure a remarkable deposit was recovered, including 15 skulls of wild goat and perhaps sheep, and articulated wing bones of at least 17 large birds such as vultures and eagles. These items appear to have been remnants of ritual costumes. A high proportion of young sheep in the faunal assemblage indicates spring/summer residence at Zawi Chemi Shanidar, complementing the winter occupation at the higher altitude cave of Shanidar, just 5 km distant. Some 200 km to the south, the open site of **Karim Shahir** is contemporary with Shanidar Cave B1 and Zawi Chemi Shanidar on the basis of the material culture assemblages (Howe 1983). Pits and working surfaces were excavated, along with clay fragments perhaps from dismantled structures, and one pit was coated with red pigment and contained a single small figurine. Lithic tool production took place at the site and the main diet elements were wild goat/sheep plus multiple other items including boar, deer and cattle as well as freshwater clam and land snail.

In sum, the Younger Dryas sites of the western lower Zagros in Iraq indicate seasonally dispersed occupation of the foothill regions, with an emphasis on hunting locally available wild goat and sheep while continuing the trend we identified in the Epipalaeolithic (Chapter 4) of expanding their diet to include smaller items such as crab, clams and land snail. Beyond diet and subsistence, however, there are several characteristics of these Zagros foothill sites that mark them as significant staging posts on the long trajectory from Palaeolithic to Neolithic, from Pleistocene to Holocene and from mobile hunter–gatherer to sedentary herder-farmer. Firstly, there is a notable elaboration of material culture, in the form a widening range of ground stone tools and of bone tools as well. Many of these new tools, which appear to relate to plant and pigment processing, are large and heavy – attachment to material culture may begin to be associated with attachment to place. Secondly, a related point is that we start to have evidence for the construction of shelters or basic buildings, using dry stone, reused stone tools and probably wattle and daub as well. As yet we are not sure what people were doing in these buildings but again they can be seen as materialising a growing attachment to place that may be interpreted as the first stages towards sedentarisation. Thirdly, we have evidence for increased concern with body adornment in the form of beads and use of red and yellow pigments, but also the new fashion for cranial modification in the form of head binding. As we shall see, cranial modification becomes a major feature of the Iranian Neolithic (Lorentz 2010). Fourthly, we have evidence for the significance of what may loosely be termed cultic or ritual behaviour, in the form of the animal skulls and large bird wings from Zawi Chemi Shanidar. These attributes of the Younger Dryas sites of the lower Zagros can be interpreted as hints and previews of what was to come during the full Neolithic millennia to follow.

To the northwest of Iran, significant cultural and social developments were also underway in the Taurus mountains and foothills of south-eastern Turkey, where sites such as Hallan Çemi, Çayönü and Körtik Tepe all reveal increasing elaboration of material culture, architecture, economy, cultic and social life through at least the latter centuries of the Younger Dryas (Özdoğan *et al.* 2011), culminating in the spectacular floruit of the cultic centre of Göbekli Tepe (Schmidt 2012).

Outside the central Zagros region in Iran, recent explorations of cave sites in the Bolaghi valley and the Arsanjan region in the southern Zagros provide convincing evidence for occupation spanning much of the Epipalaeolithic-Neolithic transition (Table 5.1) (Tsuneki *et al.* 2007; Tsuneki and Zeidi 2008; Tsuneki 2013). The Bolaghi valley is over 1800 m above sea level, therefore very much in the high Zagros. Excavations in **Haji Bahrami Cave** (also called TB75) revealed levels of Epipalaeolithic and so-called Proto-Neolithic date, spanning approximately 15,000 to 7500 BC. Phases 3 and 4 are dated to *c.* 10,000–7400 BC, thus including occupation during the late Younger Dryas. The nearby cave site of **TB130** also contained levels dated to *c.* 10,000–7400 BC. The lithic assemblages from these levels match well with those from Karim Shahir and the Iraqi lowland site of M'lefaat, with development of the new techniques of micro-blade production from "bullet" cores and pressure flaking that become so characteristic of Neolithic chipped stone technology (Hildebrand 1996; Ohnuma 2008; Nishiaki 2016, 2018; Thomalsky 2016). A series of radiocarbon dates suggests that "prehistoric people used the caves of the Bolaghi valley repeatedly but intermittently from the final phases of the Pleistocene to the beginning of Holocene periods" (Tsuneki 2013: 90). Large numbers of animal bones from Haji Bahrami Cave indicate a significant increase from Epipalaeolithic to "Proto-Neolithic" in the proportions of sheep and goat from *c.* 17% to *c.* 46% (Hongo and Mashkour 2008). This evidence may suggest a trend towards herding of animals that were still morphologically wild, but which were in fact under human management and well on the way to domestication.

Finally, cave sites close to the southern shores of the Caspian Sea provide evidence of occupation through the Younger Dryas, including **Komishan Cave** in Mazandaran (Mashkour *et al.* 2010; Vahdati Nasab *et al.* 2011, 2019b; Jayez and Vahdati Nasab 2016; Leroy *et al.* 2019) and **Hotu** and **Ali Tappeh** Caves (McBurney 1968; Harris and Coolidge 2010: 55–57; Gregg and Thornton 2012). There are therefore several major regions of Iran and neighbouring countries with good evidence for at least episodic occupation by human groups through much of the Younger Dryas, with some indication of differing trajectories of material and economic life in the different regions: a focus on wild goat hunting in the central Zagros, on sheep and goat herding in the southern Zagros, and on seal and gazelle exploitation on the Caspian shores. As the climate rapidly ameliorated at the end of the Younger Dryas from *c.* 9600 BC, with a return to warmer, wetter weather, the pace of change in human societies and their interactions with the diverse flourishing environments around them began to increase.

In our discussion below, we treat the Neolithic of Iran in three major sections, broadly corresponding with Mary Voigt's definitions of Neolithic 1–3 (Voigt 1987: 624–625). In the first section, our attention is on the earliest Neolithic, *c.* 9600–7000 BC, which in our present state of knowledge means a strong focus on the central

Table 5.1 Prehistoric cultural phases of Tang-e Bolaghi based on lithic assemblages (after Tsuneki 2013: table 7.1)

Phase	*Haji Bahrami Cave (TB75)*	*TB130 Cave*	*Period*	*Dates cal BC*
Phase 5	Trench B, layer 2	Trench E, layers 2, 1	Proto-Neolithic/ Aceramic Neolithic	?
Phase 4	Trench D, layer 3 Trench C, layer 3	Trench D, layer 3	Proto-Neolithic	7600–7400
Phase 3	Trench B, layer 3 Trench D, layer 4 Trench C, layer 4	Trench B, layer 4	Proto-Neolithic	10,000–8300
Phase 2	Trench D, layer 5		Late Zarzian	13,000–12,000
Phase 1	Trench D, layer 6		Zarzian	18,000–17,500

Zagros of western Iran, home to many of the wild progenitors of the plant and animal species first domesticated in the Neolithic (Willcox 2012). The second section considers the evidence for early dispersals of Neolithic lifeways outward across Iran in the millennium from *c.* 7500 BC, treating in turn the regions of the south-central Zagros, Fars, eastern and north-eastern Iran, north-western Iran and the central plateau. The final section discusses the last millennium or so of Iran's Neolithic, *c.* 6500–5200 BC, evaluating the evidence from all regions of Iran and situating it within a broader context of Neolithic developments in adjacent regions.

A formative zone: the Early Neolithic of the Zagros, 9800–7000 BC

Once more the Zagros region of western Iran is of fundamental importance, and recent work has shed new light on this region in the Early Neolithic, overturning earlier suggestions that the high Zagros valleys may have been "slightly too high to have been in the optimum part of the environmental zone for utilization, by incipient agriculturalists, of the potential plant and animal domesticates" (Braidwood *et al.* 1961: 2009). In particular, ongoing research has shown that a posited 2000-year gap in the occupation of the Zagros starting from *c.* 10,000 BC (Hole 1996; Bernbeck 2001; Darabi 2012) can be shortened to a few centuries at most of the early Younger Dryas. The new evidence comes from a suite of excavated sites in the central and south-central Zagros, including Sheikh-e Abad, Jani, Kelek Asad Morad, East Chia Sabz and Chogha Golan, which we here examine alongside the previously excavated sites of Asiab, Ganj Dareh and Guran. There is also increasing Early Neolithic evidence from surveyed regions across the central Zagros region (Mohammadifar and Motarjem 2008; Heydarian and Ghorbani 2016; Mansouri and Mansouri 2016), augmented by evidence for the potential burial of Early Neolithic sites under Holocene alluvial deposits (Alibaigi and Salimiyan 2020).

The oldest amongst the excavated sites is the mound of **Sheikh-e Abad**, where radiocarbon dates span *c.* 9800 to *c.* 7600 BC from the base of the mound to its summit (Matthews *et al.* 2013a; Darabi 2015: 64–67). The mound thus comprises a superb intact sequence, over 10 m in total depth, through almost the entire Early Neolithic of Iran, with no evidence for occupation of the Later (Ceramic) Neolithic period. Sheikh-e Abad is located on the fertile Dinavar plain at 1425 m above sea level with surrounding peaks above 3,000 m (Figure 5.5). The lowermost trench, Trench 1, at Sheikh-e Abad contained layers of ash, lying directly on natural, with bone, lithics and charred plant remains. Radiocarbon dates from this trench, which agree with the stratigraphy, span *c.* 9800–9250 BC, indicating a long period during which episodic visits were made to the site but with some evidence for dismantled architecture and hearths. Half-way up the mound, in Trench 2, hardened working surfaces and ash and debris from food preparation and cooking with fire-cracked stones indicate a more substantial presence. Architecture of rammed earth or *chineh* was excavated close to the mound's summit in Trench 3 (Figure 5.6), including a one-room structure with a T-shaped plan and a distinctive deposit of large wild goat and sheep skulls carefully placed in two pairs with the sheep skull in the middle at the back and some traces of red pigment, plus a wing-bone from a large bird such as a crane on the floor at one end of the room (Figure 5.7). This structure, which may have been a small shrine or room for display of hunting trophies, is radiocarbon dated to *c.* 7600 BC. Its uppermost floor was covered in a thin lens of scattered charred plant material and flecks of red pigment. Adjacent to the east is a multi-roomed rectilinear structure (W. Matthews 2018: 76–77).

Figure 5.5 The Early Neolithic mound of Sheikh-e Abad on the Dinavar Plain (photo credit: Roger Matthews).

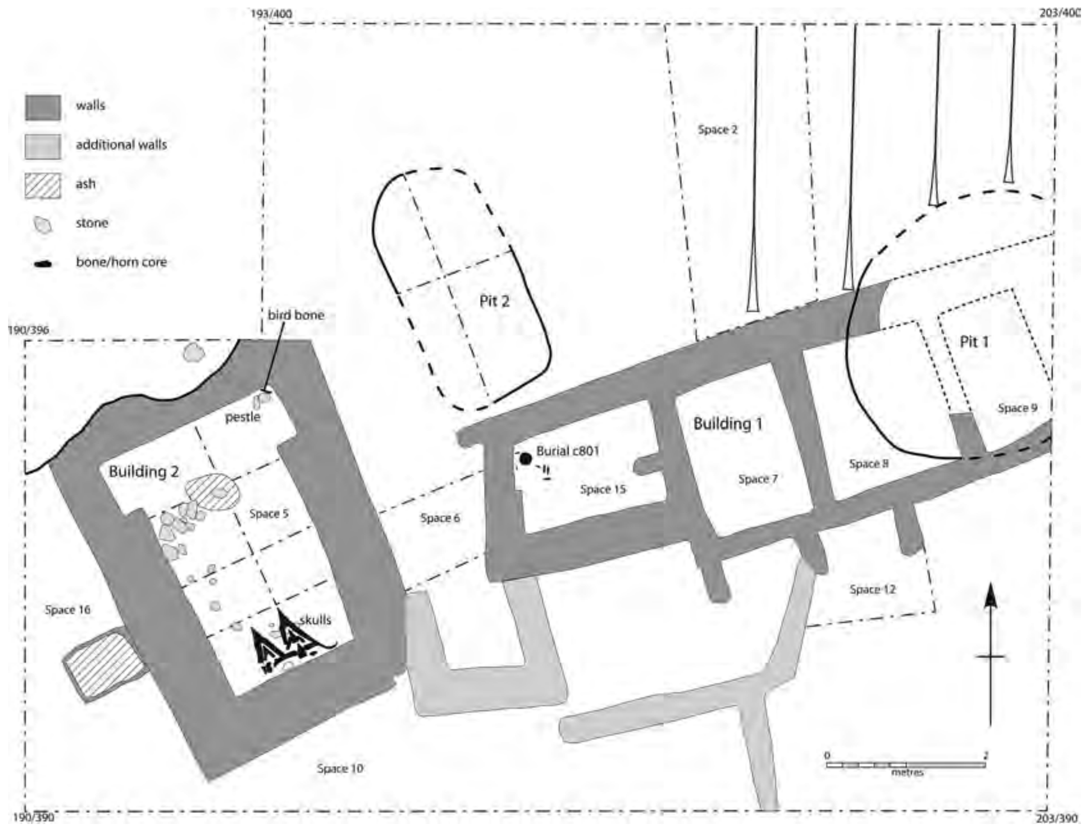

Figure 5.6 Sheikh-e Abad Trench 3 architecture (Matthews *et al.* 2013a: Figure 4.18).

There is extensive evidence for herbivore dung, burnt and unburnt, in Trenches 2 and 3 at Sheikh-e Abad but not in Trench 1 where charred wood is abundant, which may indicate that wood was the major fuel in the early phase of occupation prior to a shift to animal dung as fuel from *c.* 8000 BC (W. Matthews 2013b: 100). This shift in fuel preference may relate to a degradation of the wooded environs of the site through over-exploitation by humans and human-protected animals, goat above all. Stratified lenses of non-burnt herbivore dung within partly walled spaces in Trench 3 at Sheikh-e Abad are strongly suggestive of management and penning of herbivores, almost certainly goat and perhaps sheep. The faunal assemblage is dominated by goat with sheep, red deer, cattle and smaller game also represented (Bendrey *et al.* 2013). Although morphologically wild, the goat and perhaps sheep appear to have been under close human management by the end of the occupation at Sheikh-e Abad in the mid-eighth millennium BC, as attested by penning deposits.

Omnivore coprolites, at least some of which are human, were also found, in one case in a probable latrine (Shillito *et al.* 2013). At the nearby Neolithic sites of Asiab and Sarab, Braidwood identified thousands of probable human coprolites, which have never received study (Braidwood 1960: 695). Their potential for providing insights into diet and environment is immense. Six human burials in Trench 3 at Sheikh-e Abad were probably interred through the floors of architecture that has since been eroded off the mound's summit. There are traces of matting and red pigment with several of the burials. Tooth wear patterns are suggestive of a hunter–gatherer diet rather than a farmer–herder diet (Cole 2013).

Charred wood at Sheikh-e Abad comes in particular from pistachio and shrubs, and nuts and reeds/sedges are also well attested, which suggests that the region was not as cold and dry as the Lake Zeribar core evidence indicates (W. Matthews 2013b: 99). The charred archaeobotanical assemblage is dominated by Gramineae (grasses) and Leguminosae (legumes) (Whitlam *et al.* 2013). Occasional examples of domestic type barley grain were recovered from Trenches 2 and 3 but not from Trench 1, attesting cultivation of a domesticated crop package at the site by *c.* 8000 BC possibly introduced from outside (Whitlam *et al.* 2018). The dominance of wild grasses and scarcity of cereals prior to then is supported by the phytolith evidence (Shillito and Elliott 2013). Charred rodent pellets and evidence for pest damage on legumes are indicators of storage within the settlement at least from Trench 2. Fruits and nuts are also well attested, and there is evidence in Trench 2 for consumption of land snail in large quantities (Shillito 2013).

Figure 5.7 Sheikh-e Abad Trench 3 skulls, deposit of wild goat and sheep (Matthews *et al.* 2013a: Figure 4.29) (photo credit: Roger Matthews).

The material culture of Sheikh-e Abad is modest but distinctive. There is a wide range of bone tools, as well as objects of unfired clay and stone, although the ground stone industry is minimalist (Cole *et al.* 2013). There are also small clay "tokens" comparable to those previously found at Asiab and Sarab, which may have been used in simple accounting or recording exercises or in games (Schmandt-Besserat 1992; Bennison-Chapman 2019). Only one small human figurine was found at Sheikh-e Abad so far. Lacking from the small find assemblages in all trenches is any evidence for long-distance interaction – the chipped stone assemblage lacks a single piece of obsidian and there are no imported semi-precious stones or copper alloy fragments nor seashells. Lithic tools are almost exclusively blades and bladelets with some sickle blades and borers (Figure 5.8) (Vahdati Nasab *et al.* 2013b). The material culture is rooted in the local environment and is suggestive of a deeply situated community of people maximising their use of the full range of proximate resources, animate and inanimate.

The results from Sheikh-e Abad are reinforced by evidence from the mound of **Jani** near Islamabad-e Gharb (Abdi 2003b; Matthews *et al.* 2013a; W. Matthews *et al.* 2013b, 2019; Darabi 2015: 67–68). Jani is located at 1280 m above sea level in the warmer, lower Zagros as compared to Sheikh-e Abad. Investigation of a 60 m-long section through the mound (Figure 5.9) detected a shift from probably periodic occupation, with much burning and cooking, to more permanent occupation with plastered fire installations and impressive architecture constructed of "boat-shaped" bricks with fine white plaster floor sequences. The middle deposits at Jani are radiocarbon dated to *c.* 8000 BC, but the site is certainly occupied much earlier than that. Animal bones from Jani include remains of goat, sheep, red deer, tortoise and fish (Bendrey *et al.* 2013: 151). Evidence for animal penning or dung collection and use as fuel comes from levels dated to *c.* 8000 BC (W. Matthews 2013b).

Located approximately midway between Sheikh-e Abad and Jani on an alluvial terrace of the Qara Su river, and at 1304 m above sea level, the flat site of **Asiab** comprises extensive midden-like deposits, the major excavated feature being a large circular structure, 10 m in diameter, which appears to have served as a semi-subterranean communal facility with plastered floors and traces of pisé walls (Figure 5.10) (Braidwood *et al.* 1961; Howe 1983: 115–117; Darabi 2015: 29–31; Darabi *et al.* 2018b, 2019; Richter *et al.* 2021). One depressed area of flooring was

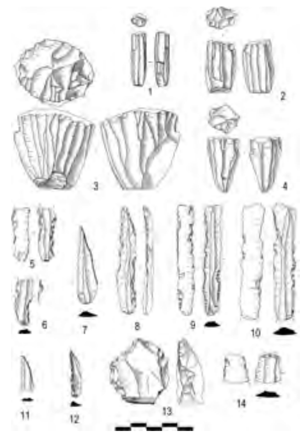

Figure 5.8 Sheikh-e Abad chipped stone tools (Vahdati Nasab *et al.* 2013b: Figure 9.14).

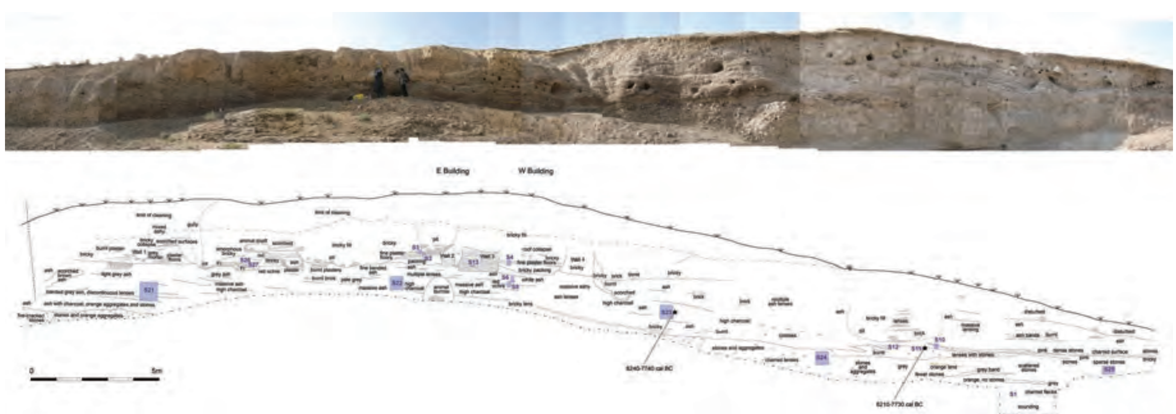

Figure 5.9 Anatomy of a Neolithic mound: 60 m-long section at Jani, Islamabad-e Gharb (photo and drawing: Roger Matthews and Wendy Matthews).

painted red and adorned by a single cattle horn. In the centre of the structure was a large pit containing the carefully arranged skulls of at least 19 wild boars, one brown bear skull plus antler from red deer, clearly a ritual deposit perhaps associated with feasting (Bangsgaard *et al.* 2019). Subsequently, the circular feature was filled with layers of ash and sequences of hearths, and within the fill there were two human burials, one sprinkled with red pigment. Large quantities of apparently human coprolites suggest that at least part of the large feature was used as a latrine at some stage. The lithics from Asiab are mainly chert blades, bladelets and scrapers, knapped on site in very large quantities. The rare obsidian pieces are probably intrusive from upper, later levels, and there are basic ground stone tools. Clay tokens, including cones and spheres, as well as animal figurines also occur. Radiocarbon dates for Asiab indicate occupation of the site at *c.* 9750–9300 BC (Zeder 2006a: 193–194; Bangsgaard *et al.* 2019; Darabi *et al.* 2019: 49), thus contemporary with some of the earliest occupation at Sheikh-e Abad and probably with lower levels of Jani too.

Evidence for human diet at Asiab is distinctive, with massive quantities of freshwater clam (*Unio tigridis* sp.), gathered from the nearby Qara Su along with freshwater crab and a range of fish. Clam would have been a seasonally harvested resource that may have been the major attractant for human groups to settle at the site seasonally over long periods. Hunted animals comprise, in order of frequency, red deer, goat, pig, sheep, badger, red fox, hare and cattle, with many other species including a range of birds attested in small quantities (Bökönyi 1977). Bökönyi's (1977: 16–22) argument that goat at Asiab were domesticated was based on the morphology of a few horn cores and on the high frequency of adult male bones in the assemblage. Zeder by contrast sees the high proportions of adult male goats at Asiab, attested by high frequency of fused long bones, as indicative of "a hunting strategy that seeks to optimize short-term off-take by preying on animals with the greatest amount of meat per

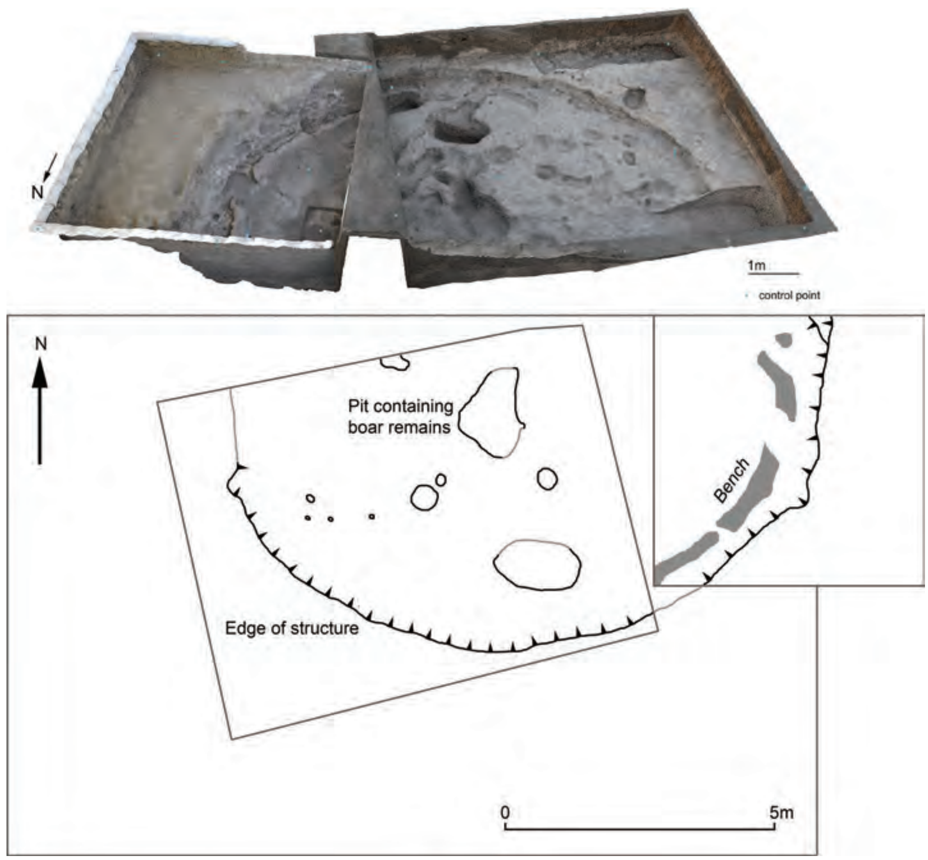

Figure 5.10 Asiab: plan and photogrammetry model of the communal structure (Bangsgaard *et al.* 2019: Figure 2) (image courtesy of Hojjat Darabi and Tobias Richter).

individual" (Zeder 2006a: 198). Hesse (1982: 413) proposes that the Asiab goat kill-off patterns indicate seasonal hunting of so-called bachelor herds of wild goat, which gather only in the spring, at the same time as large-scale clam availability. Rutting herds of male and female adults plus kids would also be hunted in the autumn. Goat hunting must have taken place at some distance from the site itself as bachelor herds dwell in the high mountains well above the plain on which Asiab is situated. Further evidence for seasonality of occupation at Asiab is provided by the bird bones of migratory species, such as corn crake. In sum, Bökönyi (1972) suggests that occupation at Asiab took place during February to April and occasionally also over winter from August to April. Plant remains are dominated by small-seeded grasses with some wild barley and wheat, with no evidence for cultivation. Charcoal suggests a woodland-steppe environment featuring pistachio and almond (Darabi *et al.* 2019: 49).

Clustering of Early Neolithic sites is suggested through intensive survey of the Sarfirouzabad plain in south Kermanshah province, which has detected three Early Neolithic sites, all situated with access to multiple ecological zones, as well as 15 sites with Neolithic ceramics. One of the sites, Chia Chakmagho, continued in occupation into the Later Neolithic (Niknami and Nikzad 2012; Niknami *et al.* 2013). Other potential Early Neolithic central Zagros sites, about which we know very little, include Sarab-e Qareh Daneh on the Kuzaran plain 70 km northwest of Kermanshah (summarised in Darabi 2015: 121–124; Bahrami and Abbasnejad Seresti 2017) and Tappeh Qazanchi in the Razavar valley where excavations have investigated levels of later ninth millennium BC date (Mashkour *et al.* 2021).

Our understanding of the central Zagros Early Neolithic is enhanced by the small mound of **Ganj Dareh** (Figure 5.11) (Smith 1968, 1972, 1976, 1990; Darabi 2015: 31–37; Darabi *et al.* 2019), at 1,400 m above sea level and part of a cluster of small Neolithic sites in the region west of Harsin including Ghenil, Qasemi and Qala Kamand Bagh (Smith and Mortensen 1980). Again, issues of goat exploitation and early steps towards domestication have been to the fore. Ganj Dareh appears to have been occupied for at least several centuries around 8200–7600 BC (Zeder and Hesse 2000; Zeder 2006a: 193–194; Meiklejohn *et al.* 2017; Darabi *et al.* 2019: 52), contemporary with Jani and upper levels at Sheikh-e Abad. The earliest occupation at Ganj Dareh, in level E, consists of

Figure 5.11 Ganj Dareh, view of site (photo credit: Roger Matthews).

multiple fire pits cut into natural soil, their ashy fill containing fire-cracked stones, animal bones, clay tokens and figurines and chipped stone debitage of locally available radiolarian chert with no obsidian (Nishiaki 2016; Thomalsky 2016). In all levels at Ganj Dareh, the lithic technology involves bladelet production through pressure-flaking of cores in the so-called M'lefaatian tradition (Kozlowski 1999) with considerable evidence also for percussion flaking. Tools comprise backed points, borers, scrapers and sickle blades of two distinct types. Traces of sickle sheen on blades increase in frequency in the upper levels of occupation. The level E evidence suggested a repeated seasonal presence at the site by small numbers of people, without permanent architectural traces. The Ganj Dareh level E material is augmented by the briefly excavated nearby sites of **Ghenil**, Qasemi and Qala Kamand Bagh (Smith and Mortensen 1980; Meiklejohn *et al.* 1992), all of which comprise ashy deposits rich in animal bones, land snails, clams, lithics without obsidian and, at Ghenil, two human burials, one with cranial modification, and all apparently of Early Neolithic date. Taken together, the sites of Ganj Dareh level E, Ghenil, Qasemi and Qala Kamand Bagh suggest a significant Early Neolithic presence within a single valley system.

Increased evidence for the house mouse (*Mus musculus*) in levels above level E at Ganj Dareh, may indicate a transition from seasonal to year-round human presence by the early eighth millennium BC (Hesse 1979). Overlying level E, levels D-A comprise significant architecture constructed of mudbrick and *chineh* (Figure 5.12) (Smith 1990). Buildings in irregular formations have generally small rooms, sometimes connected by "portholes" of unclear function, with thin fragile walls supported by makeshift buttresses with little evidence for planning. Goat and sheep horns and skulls are fitted into niches in what may be ritual adornment or trophy display. In Ganj Dareh level D vessels made of chaff-tempered, lightly fired clay were found in small storage rooms (Smith and Crépeau 1983; Smith 1990; Le Mière and Picon 1998; Petrie 2012: 282; Bernbeck 2017). It seems probable, however, that these containers were originally of unfired clay accidently burnt during an intense fire that affected the whole village in level D (Yelon *et al.* 1992). More convincing early ceramics, baked over open fires, come from levels C-A at Ganj Dareh, and the presence of kilns for preparation of lime in levels D-A indicates a sophisticated awareness of the transformative powers of fire and heat (Mortensen 2011). There are also large quantities of animal figurines and other baked clay objects, especially from level D, including so-called "gashed clay cones" found at several upland sites of the Zagros (Broman Morales and Smith 1990; Eygun 1992; Daems 2008; Richardson 2020). Anthropomorphic figurines take the form of basic squatting figures either female or without clear sexual characteristics (Daems 2001: 3, 2004: 5–7).

Zeder and Hesse's study of the Ganj Dareh goats, representing 89% of the faunal remains, has established that early stages of the domestication process were well underway by the early eighth millennium BC, attested above all by selected culling of sub-adult male goats from level D upwards and probably in level E too (Hesse 1978, 1982; Zeder and Hesse 2000; Zeder 2001, 2006a). Goat genomes from Ganj Dareh and Abdul Hosein indicate genetic distinction of managed goats from wild populations as early as 8200 BC, well prior to the development of morphological characteristics of domestication (Daly *et al.* 2021). Furthermore, the kill-off patterns plus impressions of hoof-prints in mudbricks suggest human control over herds of goat, before morphological changes in body size and horn shape have begun to manifest themselves in the archaeozoological assemblages. The Ganj Dareh goat evidence nicely complements the penning and dung evidence from Sheikh-e Abad, dated to early-mid eighth millennium BC, making a strong case for behavioural domestication of goats by humans prior to

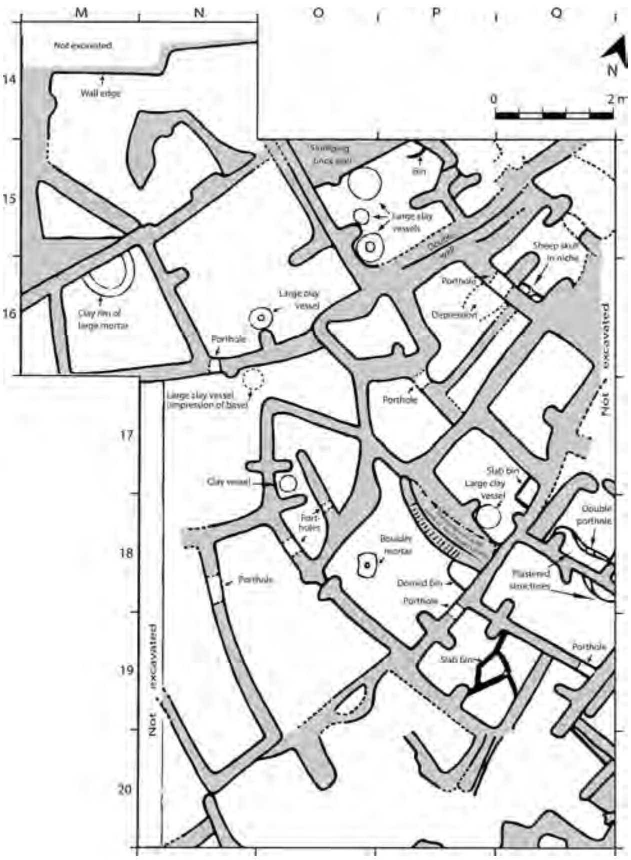

Figure 5.12 Ganj Dareh level D, plan of architecture (after Smith 1990: Figure 1).

8000 BC. Hesse (1984: 260–261) has argued for the importance of goat dung as a cooking and heating fuel in the human drive to control and eventually domesticate herds of goat. He proposes the "socialization of wild herds" perhaps through targeted provision of salt licks. Sheep, cattle, deer and pig were hunted but not domesticated through the lifespan of the Ganj Dareh settlement. Large quantities of chukar partridge amongst the faunal remains indicate intensive use of this species in the Ganj Dareh diet.

Regarding plant exploitation, the people of Ganj Dareh utilised domesticated two-row hulled barley (*Hordeum distichum*) in increasing amounts through levels E to A (van Zeist *et al.* 1984; Darabi *et al.* 2019: 51). Of special note are finds of some 50 special Y-shaped tools made from goat or deer scapulae that appear to have been used to separate grain from harvested stands (Stordeur and Anderson-Gerfaud 1985). Wild legumes and nuts such as pistachio and almond also occur and there are significant quantities of wood charcoal including pistachio, hackberry and poplar. Chemical analysis of human skeletons indicates a strong focus on a meat diet rather than consumption of plant resources (Schoeninger 1981). Human burials, adult and infant, occur in large numbers at Ganj Dareh, up to 116 individuals and generally inserted under house floors in levels D-A, including a burial of three individuals inside a clay container (Smith 1976: 17; Meiklejohn *et al.* 1980, 2017; Merrett 2004). The demographic make-up of the Ganj Dareh human remains includes large numbers of infants less than three years old plus older adults, with an overall mortality profile "similar to those in modern developing countries" (Merrett 2004: 223) and considerable evidence for dietary stress and a range of pathologies. Analysis of aDNA of an adult female from Ganj Dareh suggests a possible genetic contribution from early farmers of the high Zagros to the first farming communities of South Asia (Gallego-Llorente *et al.* 2016; see also Broushaki *et al.* 2016), while stable isotope analysis hints at possible mobility of at least a component of the human population (Merrett *et al.* 2021). There is extensive evidence for deliberate skull shaping on both male and female skulls (Lambert 1979; Meiklejohn *et al.* 1992; Daems and Croucher 2007; Lorentz 2010: 134) and for secondary reburial. Child burials were set into wall niches and more often than adults accompanied by modest grave goods.

As at Sheikh-e Abad, the complete absence of obsidian and of any other imported exotica at Ganj Dareh indicates a community at home in its local vicinity and dedicated to the pursuit of, and subsequently the penning and taming of, the rich protein resources represented by the abundant herds of goat in their surroundings. In living this way, the inhabitants of the high Zagros were continuing age-old traditions, stretching well back into even the Middle Palaeolithic, of focusing their hunting efforts and their diet on the richly available edible resources of the region, goat above all. That this lifestyle was to lead to the earliest domestication of goat is unlikely to have been an intention on the part of the people of Ganj Dareh, but its consequences were of huge impact. Once protected by human herders and provided by them with every assistance in breeding, birthing and feeding, herds of goat could thrive and spread into ecological zones previously too dangerous for them to exploit. With the proto-domesticated goats of Sheikh-e Abad and Ganj Dareh, the human–animal partnership had entered a new phase with ultimately global significance.

Still in the high central Zagros, at 1860 m above sea level, the site of **Abdul Hosein** was excavated in 1978 (Figure 5.13) (Pullar 1975, 1977, 1990; Darabi 2015: 50–52). Radiocarbon dates indicate basal occupation around 8200–7800 BC (Voigt and Dyson 1992: 159; Darabi 2015: 52; Broushaki *et al.* 2016; Daly *et al.* 2018), overlapping with that at Ganj Dareh and Sheikh-e Abad. As at those sites, the earliest evidence at Abdul Hosein is in the form of pits dug into natural soil with extensive ash deposits and cooking remains in the form of charred wood and nuts, fire-cracked stones and animal bones. Upper levels have more substantial mudbrick and *chineh* architecture (Figure 5.14), including hearths with multiple re-plasterings, interpreted as attesting a development from seasonal to year-round occupation at the site. Obsidian, absent in the lowest levels, starts to feature in small quantities originating from Nemrut Dağ sources in eastern Anatolia. The suite of plant remains from the site includes domesticated two-row hulled barley (*Hordeum distichum*), emmer wheat (*Triticum dicoccum*) and rare lentils (*Lens culinaris*), perhaps brought to the site in domesticated form (Hubbard 1990: 220). Charred wood comes from

Figure 5.13 Abdul Hosein, view of site (photo credit: Roger Matthews).

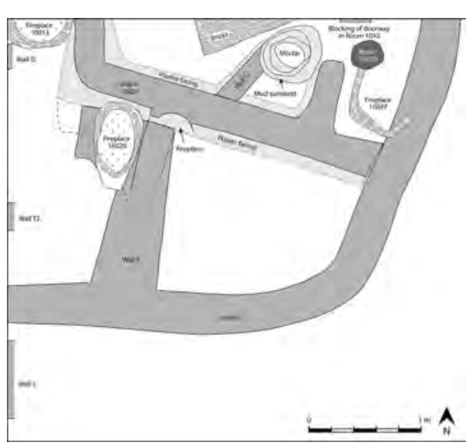

Figure 5.14 Abdul Hosein, aceramic Neolithic architecture (after Pullar 1990: Figure 19).

pistachio, almond, tamarisk and willow, all used for fuel and also in architecture (Willcox 1990). Oak is notably absent from the charcoal record. The chipped stone industry, almost entirely of chert, comprises the conventional toolkit of the Zagros Early Neolithic: blades, bladelets, scrapers and borers, often knapped from bullet cores. Sickle blades are common. Other forms of material culture at Abdul Hosein include basic ground stone and worked bone and antler tools, clay figurines of animals and rarely humans, conical clay tokens and assorted shell and bone beads. Tools and objects are made from bones of goat, sheep, gazelle, boar and wolf or leopard. Preliminary analysis of the faunal remains (Daly *et al.* 2018, 2021) indicates dominance of wild and managed goat.

Early Neolithic human burials at Abdul Hosein are intriguing in their nature and positioning. One adult female was buried with a foetus under a plastered floor and a large stone bowl placed beside her head, while in the same building a crouched human burial was crammed into an erstwhile doorway and plastered over (Pullar 1990: 10, pls. 3–4). Another adult appears to have been buried in a slumped squatting position along with the scapula of a cow (Pullar 1990: 10, pl. 14 top), and a group of four individuals, two adult and two infants, were either killed and buried by roof collapse (Pullar 1990: 10, pl. 12) or may have been inserted into the fill of an abandoned building. In any case, the intricate association of human burials with architectural spaces is a dominant feature of the Early Neolithic of the Zagros and likely indicates a developing concern over ownership of space and increasing attachment to architectural place. As at Ganj Dareh, a significant proportion of the Abdul Hosein adult skulls, probably all male, show evidence for deliberate headshaping but in a form much more pronounced than at Ganj Dareh and that would have been clearly visible, indeed striking, *in vivo* (Lorentz 2008: 296–297, 2010: 134–135, Figure 9.5, 2017). This pattern is in contrast to the headshaping attested at Ganj Dareh where both males and females display circumferential shaping. Analysis of aDNA from three of the Abdul Hosein individuals suggests that early farmers in this region were descended from local hunter–gatherer populations, distinct from those of other regions of Southwest Asia, and deriving from "the earliest known Eurasian population branching event" estimated at 46,000–77,000 years ago (Broushaki *et al.* 2016: 503).

Our knowledge of Early Neolithic life in the central Zagros has been substantially augmented in recent years by ongoing investigations at the sites of East Chia Sabz and Chogha Golan. Occupied from *c.* 8500 BC until up to 7000 BC, **East Chia Sabz** is situated in the Seimarreh river valley of the west central Zagros at an altitude of 662 m above sea level (Figure 5.15) (Darabi *et al.* 2011, 2013; Darabi 2015; Nishiaki and Darabi 2018). It is important to note that the Qara Su river adjacent to Asiab and close to other Early Neolithic sites of the Kermanshah region, flows into the Seimarreh river and that communications between these contemporary communities of the Zagros would have been quite straightforward. Architecture at East Chia Sabz is largely of stone with paved floors in small rooms. Ground stone tools and stone vessels on floors (Figure 5.16) indicate food processing and consumption within the rooms. Chipped stone tools include blades, bladelets and borers, relatively rare sickle blades, and very small quantities of Nemrut Dağ obsidian occurring in the upper levels (Darabi and Glascock 2013; Khazaee *et al.* 2014; Nishiaki and Darabi 2018). The majority of tools were manufactured from chert sources within 10–15 km of the site and from local riverbed nodules (Nezafati and Hessari 2016). The faunal assemblage is dominated by sheep and goat, with sheep more than twice as common as goat and an emphasis on slaughter of younger animals. Fish and birds are also represented. Amongst the plant remains there are pulses and large-seeded grasses. A size increase through time in wild barley grains at East Chia Sabz is taken to indicate intensive cultivation at

Figure 5.15 East Chia Sabz, view of site (photo credit: Hojjat Darabi).

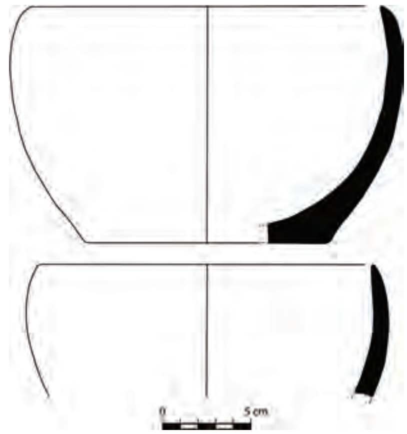

Figure 5.16 East Chia Sabz, stone vessels (after Darabi *et al.* 2011: Figure 9).

about 8000 BC (Riehl *et al.* 2012). Human burials at East Chia Sabz consist of two flexed individuals with grave goods of beads and stone tools.

Brief investigations at **Kelek Asad Morad** in the Pol-e Dokhtar region of Luristan have revealed Early Neolithic occupation dated to *c.* 8400–8250 BC (Moradi *et al.* 2016). The site is located at the intersection of the Seimarreh and Kashkan rivers at 800 m above sea level. Lithics comprise mainly pressure-flaked blades and associated bullet cores along with a few pieces of obsidian from the Nemrut Dağ source in eastern Turkey, amongst the earliest Neolithic obsidian in the central Zagros region (Barge *et al.* 2018; Roustaei and Gratuze 2020). Faunal remains are dominated by goat and then sheep, the goat identifiable as both wild and domestic. Gazelle and onager remains indicate a local steppe environment.

At the western limits of the central Zagros, close to the Mesopotamian plains of eastern Iraq, the mound of **Chogha Golan** sits close to the bank of the Konjan Cham river at an altitude of 485 m above sea level (Figure 5.17) (Darabi and Fazeli 2009; Zeidi *et al.* 2012; Conard *et al.* 2013b). Radiocarbon dates show occupation at Chogha Golan between *c.* 9750 and 7650 BC (Riehl *et al.* 2013: Figure 2, 2015: Table 1), exactly matching the duration of occupation at Sheikh-e Abad. The site is large, at 3 ha, and comprises some 8 m accumulation of Early Neolithic deposits. Its location between the very early sites of the high Zagros, discussed above, and the later sites of the low Zagros, discussed below, suggests a potential significance for Chogha Golan in the transmission of practices, and perhaps of people, animals and plants, from the highlands to the lowlands in the initial spread of Neolithic life-ways.

Architecture at Chogha Golan includes *chineh* and mudbrick structures with plastered floors and *in situ* mortars. Figurines of animals and humans, conical clay tokens, stone vessels, and pendants of bone and shell are commonly found. Very small quantities of green obsidian are found in the upper layers amongst the extensive chipped stone

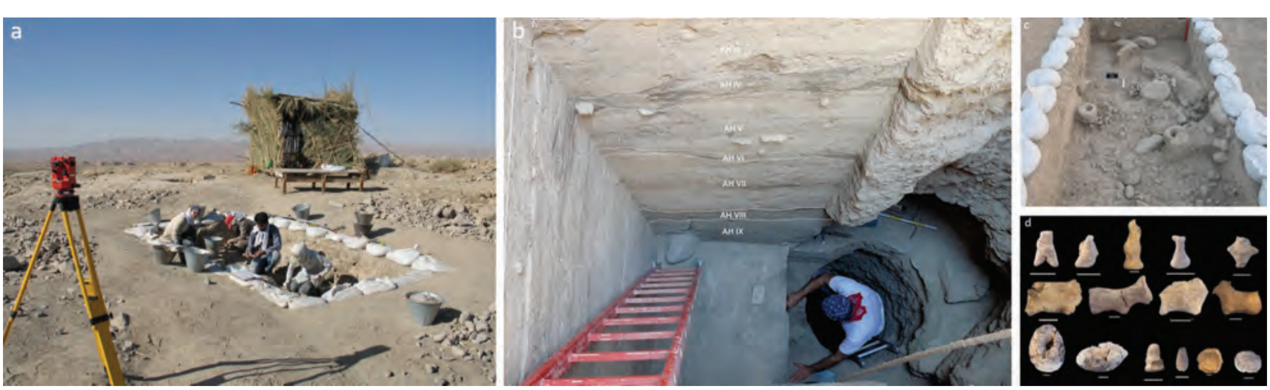

Figure 5.17 Chogha Golan, views of site and figurines (photo credit: Nicholas Conard).

assemblage that is dominated by bladelet-based tools (Zeidi *et al.* 2012: 262; Zeidi and Conard 2013), and there is a wide range of ground stone tools including mortars, pestles and pounders (Figure 5.18) (Conard and Zeidi 2013). The plant remains show a shifting emphasis through time from goat grass (*Aegilops* sp.) to cultivated wild barley (*Hordeum spontaneum*) followed by emmer cultivation (Riehl *et al.* 2012, 2013, 2015; Conard *et al.* 2013b: 79). Bases of domesticated-type emmer wheat spikelets (*Triticum dicoccum*) appear from *c.* 7800 BC and have been suggested as indicating early management of domesticated species (Riehl *et al.* 2013, 2015; Willcox 2013; Weide *et al.* 2015, 2017). This well-stratified evidence, although from a trench only 1 m^2 in area, suggests the possibility that intensification of cereal exploitation, leading to morphologically visible domestication, occurred locally within the Early Neolithic communities of the Zagros rather than being an import from the western end of the Fertile Crescent, as has been argued (Bar-Yosef 1998) but much further evidence is required on this important issue. Eleni Asouti (2017: 38) doubts that the available evidence from Chogha Golan convincingly demonstrates "the local independent development of phenotypically domesticated crop taxa," but rather sees it as showing variable intensities of plant management strategies through time. Animal remains from Chogha Golan include sheep-goat, wild boar, gazelle, equids, red deer, cattle, rodents and freshwater shells (Zeidi *et al.* 2012: 263; Riehl *et al.* 2015). Charred wood remains show persistent use of pistachio and almond woods throughout the site's occupation (Riehl *et al.* 2015).

The importance of the western slopes and plains of the central Zagros in Early Neolithic developments is further underlined by the discovery of two sites, to the southeast of Chogha Golan, on the Mehran plain at 300–485 m above sea level (Darabi and Fazeli 2009). Located close to two seasonal streams, Fasil is a 3 ha spread of aceramic material including classic Early Neolithic chipped stone tools, while Choga Khulaman yielded much ground stone and some obsidian, which might suggest a slightly later date within the Early Neolithic. Directly to the north, the site of Bar-e Palang also seems to possess significant levels of Early Neolithic date (Mansouri and Mansouri 2016), while Holocene alluviation is likely to have buried Early Neolithic sites in other regions of the western Zagros (Alibaigi and Salimiyan 2020). The significance of these sites, as with Chogha Golan, lies in their location well outside the natural habitat of wild goat and sheep. Any exploitation of these animals in this region would indicate their full domestication under human control.

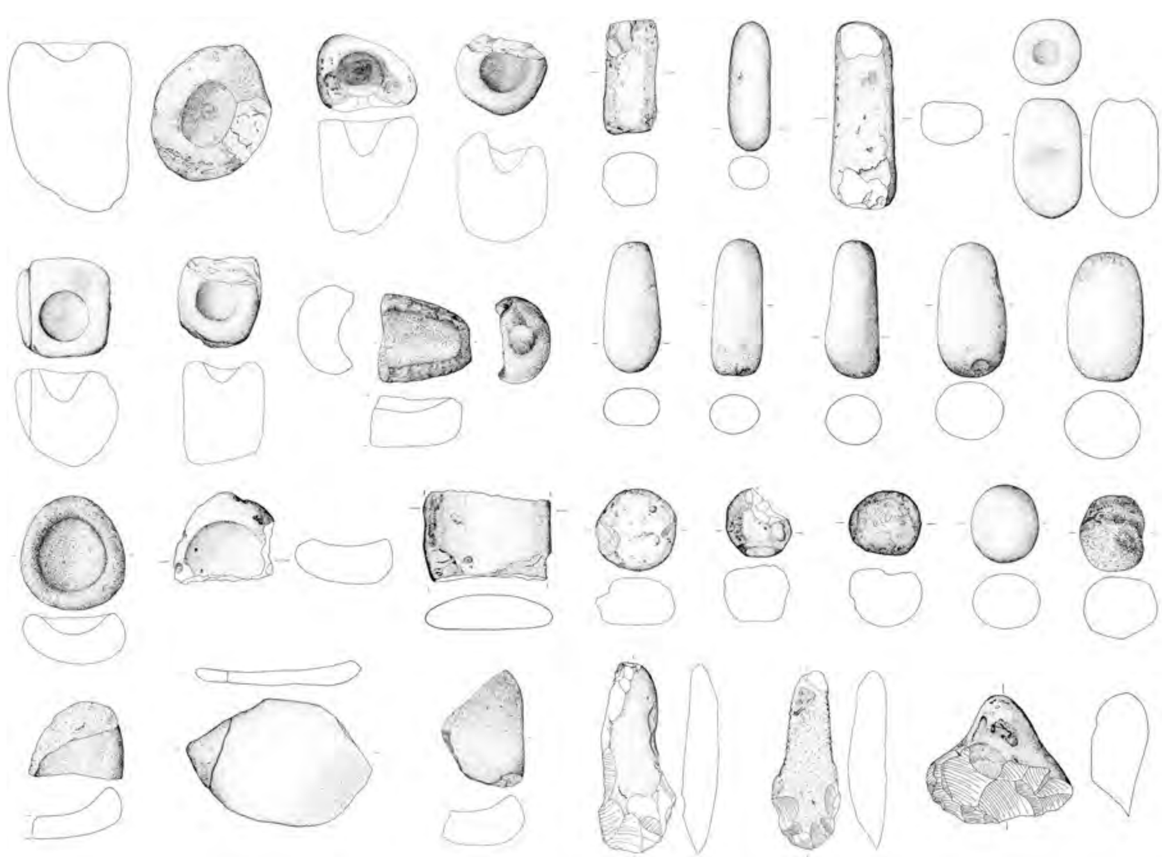

Figure 5.18 Chogha Golan, ground stone tools (after Zeidi *et al.* 2012: figs 9–10).

Excavations at the site of **Tepe Guran** in the Hulailan valley of Luristan add to the picture of a marked transition from seasonal to year-round occupation by human communities at specific locales across the landscapes of the central Zagros (Meldgaard *et al.* 1964; Mortensen 1972, 2012, 2014; Darabi 2015: 37–42). The mound is at 950 m above sea level and its lowermost levels, V-T, are of late Early Neolithic date, *c.* 7200–7000 BC (Zeder 2006a: 195). Initial occupation at Guran consists once more of bands of ash and charcoal with open hearths and evidence for sub-rectangular wooden structures. Chipped stone is common but obsidian is absent in the lower levels, rising to 11% of the assemblage in upper levels. Winter-only occupation is suggested by extensive evidence of migratory waterfowl such as goose, crane and stork, in the Early Neolithic levels (Mortensen 1972; Hole 1987b: 47). Upper levels, which date to the Late Neolithic, have more substantial architecture in the form of houses built of *chineh* and mudbrick with red and white plaster and painted terrazzo floors, but there is possibly a hiatus in occupation at Guran between the Early and Late Neolithic levels. Obsidian from Lake Van sources is common in levels T and P (G. Wright 1969: 51). Undecorated early pottery is found in levels S-O (Bernbeck 2017). There appear to be domesticated goats in the Early Neolithic levels of the site, which may have been introduced from elsewhere in the high Zagros (Flannery 2014). Notably, the later levels of occupation are marked by an increased emphasis on hunting of wild animals, including gazelle, aurochs, boar and red deer, as well as exploitation of domesticated two-row hulled barley, which Mortensen (1972) has argued as indicative of a development from seasonal transhumance to permanent village life. Land snails are also common. A discrete deposition of human bones, including four skulls and limb bones, in a pit in the early levels at Guran suggests a form of curation of human remains prior to final burial. Burials of the Late Neolithic levels at Guran take the typical form of inhumations below house floors.

We have mentioned above the indications of long-term human activity in the cave sites of TB75 and TB130 in the **Tang-e Bolaghi** region of Fars in the southern Zagros, where phases 3–5 cover the period 10,000–7400 BC (Tsuneki 2013). This evidence has been interpreted to outline

> a new schema for the neolithisation in this region: the people were more inclined towards herding than farming during the Proto-Neolithic period in the southern Zagros. If we consider the modern environment and mode of subsistence around Tang-e Bolaghi, which is dominated by the sphere of activities and transhumance of the nomadic people, the inclination towards herding in the Neolithic period seems quite understandable. (Tsuneki 2013: 91)

Beyond the intensifying exploitation of animals in this region, plant use in the Early Neolithic focused on wild legumes and nuts, with little evidence for cereals (Tanno 2008), and no traces of sickle sheen on the chipped stone tools (Ohnuma 2008).

Close to the northwest, the small site of **Rahmatabad**, at 1775 m above sea level, has provided evidence for Early Neolithic mound occupation in Fars (Figure 5.19) (Bernbeck *et al.* 2005, 2008; Azizi Kharanaghi *et al.* 2013, 2014; Weeks 2013a), with 2.5 m of aceramic deposits directly underlying Later Neolithic levels. As with the central Zagros sites the earliest levels at Rahmatabad, radiocarbon dated to the mid-late eighth millennium BC (Azizi Kharanaghi *et al.* 2013: 122, 2014a), consist of beaten surfaces and layers of ash without significant

Figure 5.19 Rahmatabad, view of site (Azizi Kharanaghi *et al.* 2014a: Figure 3) (photo credit: Hosein Azizi Kharanaghi).

architectural evidence. The site of **Toll-e Sangi** (Figure 5.20) near Safa Shahr in Fars has also yielded convincing evidence for Early Neolithic occupation in this region, dated to *c.* 7100–6800 BC, with early chaff-tempered ceramics in upper levels. Features at Toll-e Sangi include stone and mudbrick architecture, red-stained plaster floors, hearths and tools of chert and obsidian (Khanipour 2021).

While the early dates for Rahmatabad and Toll-e Sangi, taken alongside the Tang-e Bolaghi dates, allow for the possibility of indigenous Neolithisation in Fars, the alternative scenario of a dispersal of Early Neolithic practices to Fars from the central Zagros is likelier according to the earlier dates and evidence for goat herding, in particular, from sites of the central Zagros. Barley and wheat are present in the Early Neolithic levels but with no indication of local domestication, leading to the interpretation that "It is therefore likely that crops arrived at the site in an already domesticated form as a result of diffusion from other sites or regions" (Tengberg and Azizi Kharanaghi 2016: 144). Amongst the archaeobotanical remains from all the Neolithic levels at Rahmatabad there is a notable absence of cultivated pulses, an attribute also noted at Later Neolithic sites of the Kur river basin and of north-eastern Iran (Tengberg and Azizi Kharanaghi 2016). But wild, small-seeded legumes and wild grasses dominate the crop spectrum in the early levels at Rahmatabad, possibly from animal fodder, while cereals become more dominant into the Later Neolithic (see below). Significant evidence for use of sedges (*Cyperaceae*) in the Early Neolithic but not the Later Neolithic levels may suggest an increasingly arid environment around the site. Lithic assemblages in the earlier levels of Rahmatabad are in the so-called Early M'lefaatian tradition with bullet-shaped cores produced through the pressure technique, typical for the Zagros region at this time (Nishiaki 2018). Lithic scatters at sites such as Qal'at Suragh in eastern Fars (Nikzad *et al.* 2018) are also indicators of an Early Neolithic presence in this region.

The central Zagros: core zone of Early Neolithic transformations

In sum, the Early Neolithic sites of the Zagros, especially in the central region, display many features in common, as detailed above (Darabi 2015, 2016). In their lower levels they consist of stratified deposits of ash with charcoal and fire-cracked stones, pits dug into natural soil, accumulations of animal bones, sequences of open hearths and

Figure 5.20 Toll-e Sangi, view of site after excavation (Khanipour 2021: Figure 1) (photo credit: Morteza Khanipour).

traces of temporary wooden and plaster structures. Their material culture is rooted in locally available resources such as wood, chert and bone with little evidence for interactions, directly or otherwise, with distant contemporary communities. Import of obsidian, for example, is only sparsely attested until after 8000 BC with import from both Nemrut Dağ and Bingöl regions of eastern Anatolia often in association with use of white marble or alabaster for manufacture of beads, vessels and bracelets (G. Wright 1969: 79; Barge *et al.* 2018). Judith Thomalsky (2016: 177, Figure 10) points out that the location of Early Neolithic sites in western Iran is strongly associated with the occurrence of outcrops of radiolarian chert and other cherts across the Zagros range used to manufacture stone tools with newly developed pressure-flaking techniques. Similarities in lithic tool manufacturing techniques across the central Zagros region, and sometimes beyond, underpin significant levels of regional engagement by at least some elements of society some of whom may have been specialised craft-workers (Kozlowski 1999; Nishiaki and Darabi 2018).

Also common to all the sites examined above is a trend through the Early Neolithic both towards increasing complexity and elaboration in architecture, involving rectilinear, multi-roomed structures of both *chineh* and mudbrick with plastered internal surfaces, suggesting a shift from seasonal to year-round occupation, and towards increasing engagement with the wider world manifest in imported materials such as obsidian. Widespread use of simple clay tokens, as attested at Sheikh-e Abad, Ganj Dareh and other sites, may be associated with an increasing concern to record and control the agricultural economy (Ghahremaninejad *et al.* 2021), simple enjoyment of games involving counters, or their use in ritual circumstances (Schmandt-Besserat 1992, 2018; Bennison-Chapman 2019; Palka 2020). The communities of the high Zagros were undergoing fundamental changes in their lifeways, which would have a lasting impact not only on themselves but also on the environments around them and on the subsequent human communities of Iran and beyond.

In the present state of knowledge, the central Zagros zone stakes a claim to primacy as a core region or "formative zone" for the Early Neolithic (Özdoğan 2005; Helwing 2012, 2014), so that we may envisage practices such as herding and penning of goat and intensified cultivation of barley as originating in that zone and spreading outwards. The DNA evidence relating both to goat domestication (Luikart *et al.* 2006; Naderi *et al.* 2008; Pereira and Amorim 2010; Daly *et al.* 2018, 2021) and to barley domestication (Morrell and Clegg 2007, 2011; Saisho and Purugganan 2007; Lister *et al.* 2018) does not contradict an interpretation of Zagros primacy in the Neolithic Transition, although it does suggest that other centres of early domestication were also involved (Willcox 2012, 2013). An increasing body of evidence renders invalid the so-called "Levantine primacy" paradigm, which argues for a late arrival from the west of Neolithic lifeways including domesticated crops (Bar-Yosef and Meadow 1995; Bar-Yosef 2011). A critical point here is that very early sites such as Sheikh-e Abad and Asiab are located in the native habitat zones of the wild precursors of several plants and animals that became domesticated during the Neolithic (goats, sheep, barley, emmer, lentils), an essential attribute for pristine domestication (Pullar 1977; Zeder 2011; Arbuckle 2012, 2014; Willcox 2012).

Key to the debate on the earliest stages of animal domestication is the issue of pre-domestication management, culmination of a deep-time process of human-animal engagement rooted in previous millennia of hunting that can be traced back into the Middle Palaeolithic. It is now recognised that human societies exercised substantial control over certain animals, such as sheep and goat, without that control necessarily having detectable impact on the zooarchaeological assemblages recovered from excavated sites (Zeder and Hesse 2000; Zeder 2005, 2006a, 2011; Zeder *et al.* 2006; Arbuckle 2014). The widely accepted morphological attributes of domestication, such as size decrease and changes in horn and cranial and dental proportions, appear to develop significantly after animals have been brought under human control. In assemblages lacking these indicators, we can investigate issues of animal management through kill-off patterns, where slaughter of surplus young males as against hunting of large, meat-rich adults, may suggest a close degree of herd management (Arbuckle 2012). Similarly, the presence of stratified deposits of animal dung may indicate penning of animals that are morphologically wild, as at Early Neolithic Sheikh-e Abad where considerable deposits of herbivore dung, identified through micromorphology and archaeometric analyses, suggest both penning of animals and deliberate collection of animal dung for fuel by the late ninth millennium BC (W. Matthews 2013b: 99–101; Shillito *et al.* 2013). Whether a new emphasis on animal dung as fuel from *c.* 8000 BC is related to a diminishing woodland resource, arguably caused by human over-exploitation of such resources, is at present unclear but serves as a hypothesis for further investigation.

The fact that goat and sheep are the earliest animals, apart from dog and cat, to be fully domesticated is connected to their social, gregarious nature, their hierarchical social structure allowing humans to usurp the herd-leader role and their ability to consume a broad range of fodder types (Hole 1996; Driscoll *et al.* 2009). While the earliest management of sheep (*Ovis aries*), derived from the wild Asiatic mouflon (*Ovis orientalis*), occurred at the intersection of the Taurus-Zagros foothills in south-eastern Turkey and northern Iraq from the late tenth millennium BC onwards, as attested at Hallan Çemi, Zawi Çemi Shanidar, Körtik Tepe and Çayönü, the intensified management of sheep in the central Zagros is not attested until *c.* 7000 BC, as at Tepe Sarab, Tepe Guran and Jarmo (Zeder 2008; Chessa *et al.* 2009; Arbuckle 2012: 203–204, 2014: 4–7).

More at home in the high Zagros of western Iran was the bezoar (*Capra aegagrus*), the wild progenitor of domestic goats (*Capra hircus*). aDNA analyses suggest multiple wild founder populations across Southwest Asia, including the high Zagros (Fernández *et al.* 2005; Luikart *et al.* 2006; Naderi *et al.* 2008; Pereira and Amorim 2010; Gerbault *et al.* 2012; Daly *et al.* 2018, 2021; Frantz *et al.* 2020). There is some evidence that even at the earliest stages of management and domestication, human groups in Southwest Asia were differentially selecting for piebald pigmentation in their newly herded goats, perhaps for aesthetic reasons or to enable ready identification of animals within shared herds (Daly *et al.* 2018). It is not clear to what extent the native habitat of the bezoar extended eastwards across Iran to reach the heights of the Alborz range, for example, a critical issue in establishing the plausibility of independent goat domestication in regions of Iran outside the high Zagros, but the absence of wild goat remains from Upper Palaeolithic sites of the Caspian region argues against their presence there (see below). Within the Iranian Zagros the earliest management of goat is attested at Sheikh-e Abad, Ganj Dareh and Abdul Hosein from before *c.* 8000 BC (Zeder and Hesse 2000; Bendrey *et al.* 2013; Daly *et al.* 2021), as discussed above, with later spread to sites such as Bestansur in the Iraqi Zagros foothills to the west by *c.* 7600 BC (Bendrey *et al.* 2020). The transition to intensive herding of goat and sheep as dominant modes of economic activity, however, was a slow and steady process that played out over centuries after their initial domestication. It is not until the mid-later eighth millennium BC that we can detect the widespread adoption of goat and, later, sheep herding, and their dominance over hunting, which may relate to the slow development both of technologies of herding and penning and of the social acceptance of herding practices, over and above hunting, as legitimate modes of social and economic activity (Arbuckle 2014).

The early management and domestication of pigs and cattle is of less import within the context of Early Neolithic Iran (Flannery 1983; Ervynck *et al.* 2001; Mashkour 2006b; Arbuckle 2012; Price and Arbuckle 2015; Arbuckle *et al.* 2016). A study of mitochondrial DNA of ancient and modern domesticated cattle suggests that cattle were domesticated in a limited, localised region of Southwest Asia, probably southeast Anatolia in the ninth millennium BC, spreading outward from there (Scheu *et al.* 2015). A wide-ranging comparative study by Arbuckle *et al.* (2016) of cattle in the eastern Fertile Crescent demonstrates a low-level of representation at sites until the sixth millennium BC when a sudden introduction of small-sized domestic cattle at many sites across northern Iraq and all Iran strongly suggests the import of fully fledged domestic herds from outside, ultimately from the Euphrates region and possibly in association with the regional spread of Halaf culture, rather than a local process of domestication in Iran. By the later sixth millennium BC pigs and cattle occur at Neolithic sites across Iran as part of the domestic assemblage of sheep, goat, cattle and pigs, as vital components of an eastward dispersal of Neolithic agropastoral ways of life that held sway for millennia (Harris and Gosden 1996; Harris 2010). A considerable degree of regional variability in the make-up of herding strategies across Neolithic Iran, and indeed all Southwest Asia (Conolly *et al.* 2011, 2012), is likely to reflect social and cultural preferences and traditions as well as suitability of species for specific environmental conditions. A critical factor would have been the areal grazing requirements of each domesticated species, in hectares per month, with cattle needing 1–1.5 ha, sheep and goat 0.1–0.15 ha, and pigs potentially more free ranging (McClure 2013).

Human exploitation of so-called "secondary products" of domesticated animals (Sherratt 1981, 1983; Halstead and Isaakidou 2011) such as dairy produce, wool, fibres and traction intensified in the millennia after initial domestication, particularly through the Chalcolithic and Bronze Ages (Arbuckle 2012: 210–213; Good 2012). But the extensive use of animal dung is attested from the Early Neolithic onwards and its acquisition may have been instrumental in the domestication of goat and sheep. Furthermore, evidence for use of dairy products is attested at seventh millennium BC sites in Anatolia and Syria (Evershed *et al.* 2008). Wool from sheep and hair from goat do not appear to have featured significantly in the economies of Southwest Asia until the fourth millennium BC, although it is probable that household-level exploitation of sheep wool and goat hair, including as felt, was widely practiced from the Late Neolithic onwards (Ryder 1983, 1987; Barber 1991). Goat may also have been used as pack animals from an early date (Sutliff 2015). Significant human exploitation in Iran of other animals including horse, donkey, camel and zebu cattle developed much later, through the course of the Chalcolithic and Bronze Ages (Potts 1997; Mashkour 2002; Arbuckle 2012).

It is also clear that hunting continued to form a major component of food procurement and elite enhancement strategies long after the full domestication of the major animal species. Thus, hunting of gazelle and wild equids is well attested in zooarchaeological assemblages from sites of Chalcolithic, Bronze Age and even Iron Age date in several areas of Iran (Mashkour 2002). It is highly likely that fish and other water resources formed a significant part of Neolithic and later diets across Iran, but their recovery is dependent on the use of suitably fine-resolution excavation and sieving methods (Potts 2012). A Palaeolithic taste for land snail, *Helix salomonica*, survives and thrives throughout the protracted processes of Neolithisation taking place across the central Zagros.

Analogous to current understanding of processes of animal management and domestication in Southwest Asia, intensified human engagement with the plant world is also viewed as a complex, multi-staged set of developments involving a wide range of factors including climate change, sedentarisation, demographic change and an initial phase of intensified exploitation and cultivation leading in time to full domestication and morphological change of certain selected species in "a protracted and geographically diffuse process of plant domestication" (Table 5.2) (Fuller *et al.* 2012: 629; Willcox 2012, 2013; Riehl 2016). The evolution of domesticated characteristics including increased cereal grain size and non-shattering ears enabling crops to be harvested on the stand may have taken up to 2000 years fully to play out (Fuller 2007). Tantalising hints at the workings out of such processes are provided by the archaeobotanical evidence from sites such as Chogha Golan and East Chia Sabz, sites with very early indications of domesticated two-row barley, emmer wheat and lentil by *c.* 8000 BC (Riehl *et al.* 2012, 2013). Prior to this date, the evidence suggests a distinctive pattern of intensified plant exploitation in the eastern Fertile Crescent with a focus on legumes and wild plants without clear evidence for wild cereal cultivation (Arranz-Otaegui *et al.* 2016). Due to their suitability as fodder plants, intensified exploitation of these plant types may have been intimately connected with the enhanced management of goat in the region (Butler 1995).

From *c.* 8000 BC cereals play a larger part in the plant assemblages of sites in the eastern Fertile Crescent and there is a broad trend through the Neolithic across Southwest Asia to more uniformity and an associated loss of diversity in plant use, as attested by detailed comparative analyses (Riehl 2016; Ghahremaninejad *et al.* 2021). Tentative evidence from highland Zagros sites such as Sheikh-e Abad (Whitlam *et al.* 2018) suggests that cereal crop farming may have been introduced from lowland sites such as Chogha Golan to the uplands by *c.* 8000 BC, a fair exchange for the herds of managed goats that made the journey in the opposite direction. Still open is the question of whether cereal domestication happened independently in both the eastern and western Fertile Crescent (Riehl *et al.* 2013), or whether early domesticated cereals were introduced from one region to the other in the later ninth millennium BC. Comparative transregional studies of changing cereal grain size (Fuller *et al.* 2017) and of increasing use of flint sickles through the Neolithic (Maeda *et al.* 2016) have not resolved this issue, and we keenly need further rich, well-contextualised, well-dated archaeobotanical evidence from key sites such as Chogha Golan and Sheikh-e Abad where human occupation spans the critical centuries of change. Beyond question is the fundamental significance of cereals, wheat and barley above all, to all post-Neolithic societies of Iran, as encapsulated in a recent quote: "Humans and grains transformed and tied their fate to each other. A grain-free modern human society in Iran and many other parts of the world is hard to imagine" (Ghahremaninejad *et al.* 2021: 17).

Analysis of human ancient DNA (aDNA) is increasingly significant in addressing the origins and early spread of Neolithic lifeways within Southwest Asia and well beyond. The aDNA evidence from Iranian Early Neolithic sites, including Ganj Dareh and Abdul Hosein, reveals a distinctive genetic make-up of early Iranian farmers differing from that of early farmers of the western Fertile Crescent to an extent "as great as the differentiation between Europeans and East Asians today," with both groups of farmers genetically derived from local hunter–gatherer populations (Lazaridis *et al.* 2016; Reich 2018: 95). A genetic contribution from Neolithic Iranian/Caucasian humans to Early Holocene central Anatolian populations (Feldman *et al.* 2018) could attest mutual meetings and pair-bondings in the course of procurement of materials such as obsidian from Anatolian and Armenian sources, supported by increasing evidence for early exploitation of such sources in the southern Caucasus (Orange *et al.* 2021a, 2021b).

Table 5.2 Founder plants forming the basis of early farming in Southwest Asia (after Willcox 2012: table 9.1)

Wild progenitor	*Cultivar*	*English name*
Triticum urartu	*?*	
Triticum boeoticum	*Triticum monococcum*	einkorn
Triticum dicoccoides	*Triticum dicoccum*	emmer
Hordeum spontaneum	*Hordeum distichon*	barley
Lens orientalis	*Lens culinaris*	lentil
Pisum humile	*Pisum sativum*	pea
Cicer reticulatum	*Cicer arietinum*	chickpea
Vicia ervilia	*Vicia ervilia*	bitter vetch
?	*Vicia faba*	broad bean
Linum bienne	*Linum usitatissimum*	flax

At present the central Zagros region has the fullest evidence for significant human activity, including intensified engagement with plant and animal resources, through much of the tenth millennium BC and later, with the sites of Sheikh-e Abad, Asiab and Chogha Golan especially to the fore (Figure 5.2). But new evidence is continually being generated by ongoing surveys and excavations, and it may be that in due course we view the origins and early dispersal of a Neolithic way of life in the eastern Fertile Crescent as a multi-core process within and across Iran and adjacent regions. Intimately connected to the development of animal and plant management and domestication is the issue of sedentism. As we have seen above, the earliest levels at Early Neolithic sites of the central Zagros comprise little or no evidence for substantial architecture but rather host layers of ash and debris with pits and hearths. Only the large semi-subterranean structure at Asiab is suggestive of a significant investment of labour and resources into a substantial built structure, which may have fulfilled a communal function analogous to that of similar Early Neolithic structures across Southwest Asia (Richter *et al.* 2021). Solid architecture is attested from *c.* 8000 BC at many of the same sites across the region, and if we may associate this architecture with a more permanent human presence at these sites, then the development of year-round sedentism marches hand-in-hand with the earliest convincing evidence for intensified animal management in the form of penning and extensive dung use.

Taken together, the increasingly rich data and comparative analyses support an interpretation of the origins of the Neolithic of central western Iran as following a locally distinctive pattern of socio-cultural development (Darabi 2016), whereby small-scale communities intensified their interactions with the gradually changing environments around them so as to enhance their resource bases in the context of a steadily ameliorating climate within a mosaic of change across Southwest Asia. These developments reached a climax at about 8000 BC at which point we can discern many significant socio-cultural attributes of the Early Neolithic societies of the central Zagros, including the construction and elaboration of architecture, the management of herds of goat, the use of animal dung as fuel, the intensified cultivation of cereal crops, the enhancement of transregional networks of engagement as attested by obsidian imports and changes in chipped stone tool technologies (Nishiaki and Darabi 2018). Study of similar, approximately contemporary socio-cultural developments in the Levant region of the western Fertile Crescent has suggested the possibility of impact from a short episode of global climatic instability, the so-called 10.2ka BP event (Borrell *et al.* 2015), succeeded by the so-called Levantine Moist Period (Weninger *et al.* 2009), which may have stimulated an environmental context for the intensified exploitation and ultimately domestication of plants and animals, but our data from the eastern Fertile Crescent remain insufficient to address this issue adequately.

The Early Neolithic evidence from DNA of humans, including from Iranian Neolithic individuals (Broushaki *et al.* 2016; Gallego-Llorente *et al.* 2016; Lazaridis *et al.* 2016; Reich 2018), DNA of goats (Daly *et al.* 2018), DNA of barley (Lister *et al.* 2018) and from the composition of plant assemblages (Fuller *et al.* 2012; Arranz-Otaegui *et al.* 2016; Riehl 2016) all point to "a domestication process carried out by humans in dispersed, divergent, but communicating communities across the Fertile Crescent" (Daly *et al.* 2018: 86–87), with communities of the central Zagros region contributing their own special attributes and achievements to this kaleidoscopic episode of steady but ultimately dramatic transition.

Spreading the word: initial Neolithic dispersals across Iran, 7500–6500 BC

We now examine the evidence for the earliest Neolithic occupation across Iran outside the central Zagros, beginning with the south-central Zagros. To some extent overlapping in time with the later centuries of the developments outlined in the previous section, the process of dispersal of newly acquired practices in animal and plant exploitation was well underway by the later eighth millennium BC. In tracing the earliest dispersals of the new modes of life developed during the Early Neolithic we descend from the highlands of the central Zagros and follow the spread of Neolithic lifeways into other regions of Iran. As we depart from the central Zagros, we are also departing from the native habitat zone of many of the cultivated and domesticated species now locked into increasingly intensified engagement with human communities (Figure 5.21). Thus, the herds of goat attested at sites such as Ali Kosh on the Deh Luran plain and at Chogha Bonut on the Susiana plain cannot have wandered there by themselves but must have been moved and sustained there under human control and protection, in other words as entirely managed herds.

The evidence suggests that Neolithic dispersals across Iran were effected by movement of people (with their plants and animals) as much as by cultural diffusion or acculturation, the movement of ideas and practices. DNA studies of modern populations support the interpretation of significant movement of early farmers in the Neolithic of Iran (Quintana-Murci *et al.* 2004), while aDNA studies show that Early Neolithic Iranian farmers of the Zagros were distinctly different from contemporary early farmers in the western Fertile Crescent

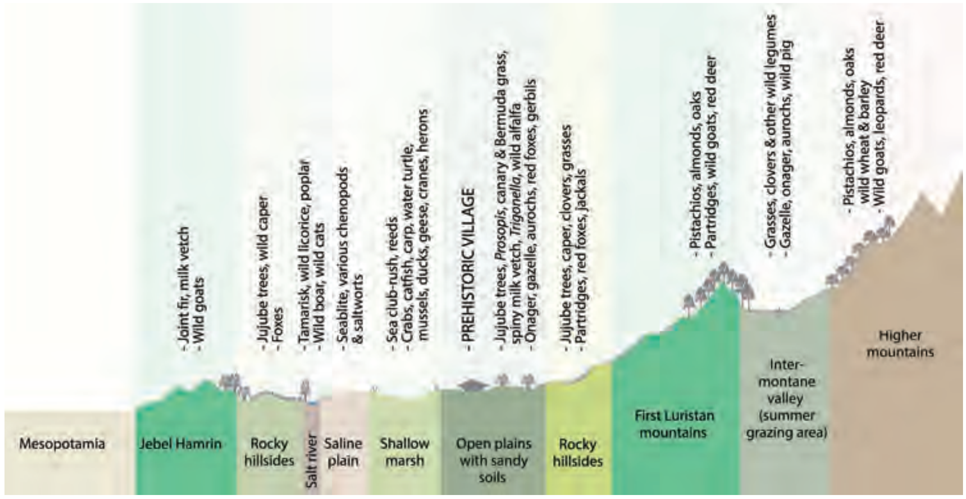

Figure 5.21 Characteristic ecological cross-section from the Mesopotamian plain through Khuzestan and into the Zagros (after Hole *et al.* 1969: Figure 2).

(Broushaki *et al.* 2016; Lazaridis *et al.* 2016; Reich 2018: 95). They also show that Iranian Neolithic genes have a significant presence amongst the contemporary population of India, suggesting an Iranian origin for the spread of farming eastwards as far as the Indian sub-continent (Reich 2018: 148, Figure 18). DNA studies of barley (Morrell and Clegg 2007; Saisho and Purugganan 2007; Lister *et al.* 2018) and goats (Naderi *et al.* 2008; Daly *et al.* 2018) indicate multiple independent domestications across Southwest Asia including Iran, but the archaeological evidence so far provides little indication of pre-domestication experimentation prior to the introduction of full-blown cereal agriculture in any region outside the central Zagros.

Input from palaeoclimate proxy records is also shaping the research agenda. As discussed above, there is suggestive evidence for an association of Neolithic settlement distributions and the 9.2 ka BP event (i.e. later eighth millennium BC) and its associated drop in temperatures and precipitation (Fleitmann *et al.* 2008), arguably detectable in the abandonment of several Early Neolithic sites and the new foundation of several Late Neolithic sites in the eastern Fertile Crescent and beyond. Further concerted programmes of radiocarbon dating in concert with analysis of existing and new palaeoclimate proxy records (Flohr *et al.* 2016; Jones *et al.* 2019) are needed effectively to address this issue.

The south and central Zagros

The key sites of Ali Kosh, Chagha Sefid on the Deh Luran plain and Chogha Bonut on the Susiana plain are located close by good fresh water sources on the low-lying plains and foothills of the Zagros range in the modern provinces of Ilam and Khuzestan, well beyond the habitat zone of wild goat (Zeder 2006a: 202). At 150 m above sea level, **Ali Kosh** is especially important because of its long sequence of occupation and because it is a well-researched and published site (Figure 5.22) (Hole *et al.* 1969; Hole 1987c; Voigt and Dyson 1992: 123–124; Darabi *et al.* 2017b, 2018a). Recent radiocarbon dates indicate occupation in the earliest (aceramic) phases, called Bus Mordeh and Ali Kosh, at *c.* 7500–7400 BC, and in the subsequent Mohammad Jaffar phase (earliest ceramic) from *c.* 7000 BC (Zeder 2006a: Table 14.2). The earliest occupation at Ali Kosh consists of rectilinear architecture, and layers of ash and midden with lithic debris, burnt animal bones and charred plants, mainly legumes and also emmer wheat and two-row hulled barley (Hole *et al.* 1969: 36). Obsidian, from east Anatolian sources (Renfrew *et al.* 1966; Barge *et al.* 2018), features rarely in the chipped stone assemblage from the aceramic Neolithic levels. Both chipped stone sickle blades and ground stone implements increase in time in the successive layers at Ali Kosh (Thomalsky 2016: 174), while clay figurines and tokens similar to highland Zagros types decrease in frequency through time. Architecture also increases in sophistication and scale through time, with stone foundations underlying mudbrick walls in the Mohammad Jaffar phase. Early experiments with metal are indicated by finds such as a rolled copper bead from Ali Kosh (Pigott 1999: Figure 4.2; Weeks 2012: 296), dated to late eighth/early seventh millennium BC (Thornton 2009: 308). Basic ceramic vessels in the Mohammad Jaffar phase include examples coated in bitumen, probably from local sources (Gregg *et al.* 2007), perhaps building on a tradition of manufacture of vessels from gypsum and calcareous clays (Kingery *et al.* 1988; Miyake 2016; Petrova 2019).

Figure 5.22 Ali Kosh, view of site (Darabi *et al.* 2018b: Figure 2) (photo credit: Hojjat Darabi).

Within the Bus Mordeh level at Ali Kosh there is a distinctive deposit of human remains, comprising limb bones of at least three adults with strings of stone and shell beads and turquoise ornaments, all coated in red pigment (Hole *et al.* 1969: 248). This deposit compares well to the contemporary secondary human burial at Guran discussed above and, as at Guran, burials in subsequent Neolithic levels at Ali Kosh take the form of interments under house floors, wrapped in reed mats, suggestive of more permanent occupation at the site. In the Ali Kosh phase, there is a deposit of up to 13 human burials, placed in a squatting position, coated in red pigment and accompanied by hundreds of beads of stone and shell (Sołtysiak and Darabi 2017). These burials appear to be associated with a distinctive deposit of animal skulls and horn cores within a *chineh* and mudbrick structure itself coated in red pigment (Darabi *et al.* 2017b). Many of the Ali Kosh human skulls show signs of deliberate cranial deformation (Figure 5.23) (Hole *et al.* 1969: 42; Darabi *et al.* 2017b: 17; Sołtysiak and Darabi 2017: Figure 5; on a cautionary note regarding head-shaping at Ali Kosh, see Niknami *et al.* 2011) as also attested at Chagha Sefid (Hole 1977) and at several highland Zagros sites (Meiklejohn *et al.* 1992; Daems and Croucher 2007). In the Mohammad Jaffar phase a group of adult burials was found in an external area, perhaps a small cemetery.

Regarding animal use at Ali Kosh, the earliest occupation at the site features domesticated goat, with increasing morphological evidence for domestication in the phases after Bus Mordeh (Figure 5.24). As Zeder (2006a: 202) has pointed out, isolation of herds of goat at Ali Kosh from breeding with their wild cousins in the high Zagros would be a significant factor in the morphological and metrical changes, including a reduction in animal size, that are detectable in the Ali Kosh goat remains. It is likely that layers of "orange compost" at Ali Kosh (Hole *et al.* 1969), dated to *c.* 7000 BC, are in fact trampled dung deposits of penned animals, similar to those attested in the upper levels at Sheikh-e Abad (W. Matthews *et al.* 2013b; Shillito *et al.* 2013). There can be no doubt that goats were fully under human control from the earliest occupation at Ali Kosh. Goat kill-off patterns, with emphasis on slaughter of young males and delayed slaughter of females, show "management of goat herds with the goal of promoting the overall security and growth of the herd" (Zeder 2006a: 201). Suggestions by Hole *et al.* (1969: 322) that in this phase Ali Kosh was seasonally occupied, only during autumn-winter, while at other seasons flocks of goat were herded to upland pastures do not find support in either the culling patterns – with juvenile

Figure 5.23 Ali Kosh, cranial deformation on individual H6 (Sołtysiak and Darabi 2017: Figure 5) (photo credit: Hojjat Darabi).

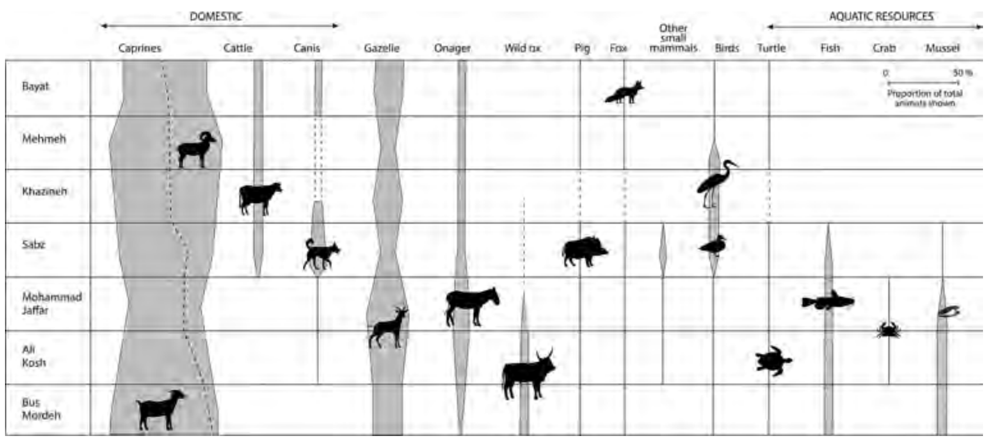

Figure 5.24 Ali Kosh, animal exploitation through time (after Hole *et al.* 1969: Figure 134).

goats culled in spring-summer – or the archaeobotanical evidence, which indicates summer grazing of herds on nearby harvested fields (Miller 2013; Arbuckle and Hammer 2019). Alongside the exploitation of domesticated goats, the early occupants of Ali Kosh hunted a range of wild animals in the vicinity of the site, including gazelle, onager, aurochs and boar.

The earliest phases at Ali Kosh are marked by significant consumption of aquatic resources including fish, turtles, crabs and clams as well as duck and geese, reflecting the marshy environs of the site. Through the centuries of the Early Neolithic we might envisage groups of humans making their way from their summer camps in the high Zagros to their winter hunting and fishing grounds of the low plains of Deh Luran, Mehran and Susiana. The marshes and springs of the low plains would be highly attractive to the migratory birds and herds of animals, such as gazelle and onager, which would in turn be highly attractive to these hunting and foraging bands of people. In due course, around 7500 BC, human groups decided to take their newly penned and perhaps tamed goats from the highland zone with them on their autumn descent to the plains, thus ensuring a “walking larder” (Clutton-Brock 1989) that could act as a reserve in case of failure during the winter hunting and fishing season. Herds of goat would also provide fuel in the form of dung, and it is notable that wood charcoal was not found at Ali Kosh or at Chogha Bonut. That we see a marked decline in consumption of aquatic resources in the upper levels at Ali Kosh is likely due to the considerable success of this policy of goat herding and movement.

A further pointer to the highland connections of the early occupants at Ali Kosh is provided by analysis of the plant remains, which are interpreted to indicate that the Bus Mordeh phase inhabitants of Ali Kosh “came from uplands with only faintly developed agricultural attitudes; but with a long tradition of plant collecting behind them” (Helbaek 1969: 423). The highland Zagros origins of the first settlers at Ali Kosh are thus attested through multiple strands, including herded goats, cultivated cereals such as emmer wheat and two-row barley, and the use of spherical clay tokens similar to those of upland Early Neolithic sites. These last objects have been interpreted by Denise Schmandt-Besserat (2018: 365) as evidence for the development of a Neolithic "farming redistribution economy," which might be viewed as a first step on the path towards the sophisticated administrative technologies of Chalcolithic and later societies of the region and beyond (Chapter 6), although doubts have been expressed about the validity of this concept within the context of Neolithic Southwest Asia (Bennison-Chapman 2019; Palka 2020).

Also on the Deh Luran plain, the site of **Chagha Sefid** has early levels of late eighth and early seventh millennia BC, a little later than earliest Ali Kosh (Hole 1977, 1987c; Voigt and Dyson 1992: 124–125). Earliest levels at Chagha Sefid comprise midden layers of ash with disarticulated architectural fragments and figurines, along with rectangular mudbrick houses built on natural soil, human skulls with evidence of cranial modification and basic vessels of gypsum (Miyake 2016). The food resources at Chagha Sefid show a more developed Neolithic aspect, with fully domesticated goat and sheep as well as use of domesticated cereals, suggesting a rapid acculturation of the occupants of the Deh Luran plain to the new Neolithic farming and herding practices that had been introduced, probably by themselves, from the highland zone to the north.

Further southeast, on the Susiana plain in Khuzestan, the small site of **Chogha Bonut** has Early Neolithic layers of ash and clay dated to *c*. 7200–7000 BC (Alizadeh 2003a: table 3, 2008: 4–5; Zeder 2006a: Table 14.2), with beaten earth surfaces, hearths with fire-cracked stones and multiple animal bones. Clay tokens, figurines and rocks coated in red pigment are also found. In the Formative Susiana levels (E-B) at Bonut, *c*. 6900–6700 BC, two partially preserved buildings were excavated, constructed of long cigar-shaped bricks covered with plaster. One of the buildings has a substantial "hall" with at least eight fire pits dug into the floor, all interpreted as indicating "non-domestic use for this building" (Alizadeh 2003a: 40). In the succeeding Archaic Susiana 0 phase at Bonut, *c*. 6700–6500 BC, further large-roomed buildings were built of cigar-shaped bricks. Faunal remains from Chogha Bonut show herding of goat and sheep and some exploitation of wintering birds, all interpreted as evidence for human presence at the site at least during winter and early spring (Redding 2003: 142), as proposed for early levels at Ali Kosh discussed above. Charred plant remains include barley (*Hordeum vulgare*), emmer wheat (*Triticum dicoccum*), einkorn (*Triticum monococcum*) and lentils (*Lens*), an assemblage indicative of a developed agricultural capability (Miller 2003). Early pottery from Chogha Bonut includes so-called "tadpole ware" similar to examples from Tepe Sarab, Sarab-e Yavari and Jarmo a long way to the northwest in Iraqi Kurdistan (Levine and McDonald 1977; Alizadeh 2008: 57; Alibaigi 2013).

At the southern limits of Greater Susiana, initial investigations of **Tappeh Mahtaj** on the Behbahan plain have revealed occupation of the later eighth and early seventh millennia BC, only 45 km north of the current shores of the Persian Gulf at 310 m asl (Darabi *et al.* 2017a, 2020). Lithics comprise typical Neolithic bullet cores of chert (Figure 5.25), small quantities of obsidian and many ground stone tools for plant processing. Plant remains are not sufficient to establish whether or not domesticated crops were being exploited. Faunal remains include sheep/goat, Persian gazelle and aurochs with no morphological evidence for domestication, although deposits of animal dung may indicate penning. The site may have been a seasonally occupied camp, comparable to early levels at Ali Kosh and Chogha Bonut, whose occupants pursued a mixed economy of herding, hunting and cultivation, doubtless with significant interaction with communities of the high Zagros not far to the east and north. The

Figure 5.25 Tappeh Mahtaj, chipped stone cores and tools (Darabi *et al.* 2017a: Figure 7) (photo credit: Hojjat Darabi).

significance of Tappeh Mahtaj lies in its location, both close to the shores of the Persian Gulf and also midway between the Early Neolithic sites of the central Zagros and the earliest Neolithic occupation of the Fars region to the southeast, as discussed below. Human presence on the Izeh plain in eastern Khuzestan includes many Upper Palaeolithic and Epipalaeolithic rock shelter sites and a few of Neolithic date, according to surface lithics (Niknami *et al.* 2009; Jayez 2015).

A distinctive component of the settlement trajectory of Neolithic communities of Iran is suggested by the small site of **Tepe Tula'i** in northern Susiana. The site, dated to *c.* 6700 BC, has been interpreted as a camp for mobile pastoralists on their seasonal movements with herds of domesticated animals, analogous to known campsites of modern pastoral groups (Hole 1974, 1987a, 2004). Others, by contrast, have interpreted the Tula'i evidence as attesting low-level seasonal movement of people with their animals within an integrated agro-pastoral economy associated with nearby larger villages (Wheeler Pires-Ferreira 1975; Bernbeck 1992; Sutliff 2015; Arbuckle and Hammer 2019). Either interpretation is supported by the absence of sickle blades, mortars and grinding stones at the site (Thomalsky 2016: 175). Lumps of bitumen at Tula'i come probably from local sources (Gregg *et al.* 2007). Little understood highland sites situated between Khuzestan and Fars, such as Tappeh Harrar and other sites in the Kohgiluyeh region of the southern Zagros, with their chipped stone bullet cores and bladelets as well as heavy stone mortars may represent very Early Neolithic occupation of this region but excavated information is as yet lacking (Azadi and Gezelbash 2011; Azadi 2016; Azadi *et al.* 2016).

Back in the central Zagros, the site of **Tepe Sarab** near Kermanshah is of special interest as it attests continuation of seasonal hunting practices well after the early development of goat-herding (McDonald 1979; Hole 1987b: 46–47; Voigt and Dyson 1992: 157; Darabi 2015: 42–49). Located at 1300 m above sea level, the site consists of successive spreads of ash with burnt reeds from modest structures. Thin mud walls in the upper levels suggest a transition to more permanent settlement. The faunal remains indicate a strong focus on hunting of gazelle alongside goat/sheep and pig herding (Bökönyi 1977; Hesse 1978), with heavy consumption of land snail, an ancient Zagros delicacy as we have seen. Clay figurines of humans and animals (dog, pig, boar, sheep, goat) are found at Sarab in very large numbers (Broman Morales 1990; Daems 2004: 7–9), one of which bears incised markings dubiously understood to represent a fleece (Ryder 1987: 114; Good 2012). Most striking is a figurine representing a human female with elongated neck, protruding breasts and exaggerated thighs, probably related to fertility (Figure 5.26) (Broman Morales 1990: pl. 6.d; Vahdati Nasab and Kazzazi 2011). Only 18 of the *c.* 650 figurines from Sarab are clearly portrayed as male (Daems 2004: 8).

Ceramics from Sarab comprise a range of painted styles with geometric motifs in two major phases (Voigt and Dyson 1992: 157; Mortensen 2011; Darabi 2015: 45–46). Radiocarbon dates suggest some occupation at Sarab from *c.* 7000 to 6400 BC (Zeder 2006a: Table 14.2, 2008) although other dates put the main occupation later in the seventh millennium BC (Darabi 2015: 49). The evidence from Sarab thus indicates that human communities in the high Zagros chose to maintain traditional hunting practices for several centuries along with herding and penning of goat and sheep. The site also hosts the earliest evidence for the introduction of cattle into the Zagros at 6400–6000 BC, probably originating from the middle Euphrates region (Zeder 1999, 2005).

Figure 5.26 Tepe Sarab, figurine (Nokandeh 2017: Figure 8) (photo credit: Nima Fakoorzadeh, Baloot Noghrei Inst., courtesy of the National Museum of Iran).

To the northwest in the western foothills of the Zagros range around Sar-e Pol-e Zahab, initial field surveys have located ceramic Neolithic sites, some of which may have pre-pottery levels (Alibaigi and Salimiyan 2019, 2020), stressing the potential importance of this region as a likely routeway for the movement of materials such as obsidian from their Anatolian sources into the high Zagros zone. Surveys of the Azna plain in eastern Luristan and the Khorramabad plain have identified significant numbers of ceramic Neolithic sites, all proximate to fresh water sources (Bahrami *et al.* 2012; Abdollahi *et al.* 2015). Radiocarbon dates from Qaleh Rostam, situated at almost 2000 m above sea level in the high Zagros at the southern edges of the Central Plateau, indicate earliest occupation in this challenging region by the late eighth millennium BC with subsequent intermittent occupation for up to a millennium (Daujat *et al.* 2016: 109; see also below).

In sum, the south-central Zagros is clearly a major region for the initial spread of pristine Neolithic developments from the mid-eighth millennium BC, probably originating in the central Zagros to the north. The dispersal of herding and cultivation practices occurred across multiple regions, with poorly understood aceramic Neolithic sites such as Rihan III and Tamerkhan in the western Zagros foothills (Oates 1968; Matthews 2000: 50) probably attesting a contemporary westward spread of the new Neolithic lifeways. Early Neolithic sites on the Shahrizor and Rania plains of central-eastern Iraq, including Bestansur and Shimshara (Matthews *et al.* 2016, 2019, 2020) may also be understood as elements in this initial dispersal, whether of people, animals, plants, practices or all of them. Any connection with the apparent climatic adversity of the 9.2ka BP event (Fleitmann *et al.* 2008; Flohr *et al.* 2016) remains highly tenuous, and in fact much of the evidence points to dispersal taking place several centuries before 9.2 ka BP.

The earliest Neolithic beyond the Zagros

Evidence for the initial pulse of Neolithic expansion beyond the foothills and low plains of the central and south-central Zagros is sparse. We discussed above the evidence from Tang-e Bolaghi and Arsanjan as well as from Rahmatabad and Toll-e Sangi for early developments in Fars, which span the transition from the earliest Neolithic developments in the Zagros to the spread outwards (Weeks *et al.* 2006). What are the earliest Neolithic indicators in regions of Iran beyond the central and southern Zagros?

In north-eastern Iran, aceramic Neolithic occupation is attested at only a few locations. The poorly understood site of **Qaleh Asgar** near Tehran appears to date to *c.* 7200–6900 BC, with obsidian originating from east Anatolian sources (Biglari 2012b; Barge *et al.* 2018). This site, and another putative aceramic Neolithic site within modern Tehran (Esmaeili Jelodar 2018), could constitute important staging posts for the spread of Neolithic communities making their way along the Great Khorasan Road to found new settlements to the east (Roustaei and Gratuze 2020). Prime amongst these is the mound of **Sang-e Chakhmaq West** near Shahrud, located at 1400 m above sea level on an alluvial fan to the south of the Alborz Mountains (Masuda 1974; Harris and Coolidge 2010; Masuda *et al.* 2013; Thornton 2013a; Roustaei 2014a, 2014b, 2016b; Roustaei *et al.* 2015). The Neolithic levels here include substantial single-room mudbrick houses (Figure 5.27) with red-painted plastered floors and fire installations, which have been interpreted as having ritual purpose, partly because of their association with deliberately deposited clay figurines (Masuda *et al.* 2013: 216). Pottery is limited to a few sherds of soft-ware (Masuda

Figure 5.27 Sang-e Chakhmaq West, architecture (Masuda *et al.* 2013: Figure 14.4a).

1984). Tools were made of chert and imported obsidian as well as ground stone, antler and bone. Obsidian was imported from Bingöl A and Bingöl B sources near Lake Van in eastern Anatolia, making the site the easternmost recipient of obsidian from Anatolian sources at 1300 km directly distant (Roustaei and Gratuze 2020).

There are many figurines, human and animal (Furusato 2014), as well as human burials in flexed positions under house floors at Sang-e Chakhmaq West (Tagaya 2014). One foetal burial was accompanied by 183 shell beads and 90 clay beads (Miyauchi 2014). Hunting of wild sheep, goat and gazelle appears to have been the major source of meat at Sang-e Chakhmaq West, with lesser emphasis on wild boar and red deer (Mashkour *et al.* 2014; Roustaei *et al.* 2015). The inhabitants also herded domestic goat and possibly sheep and small quantities of cattle but not pig. Significant quantity and diversity of wetland bird species indicates exploitation of watery environments while hunting of gazelle shows incursions into the desert steppe to the south. Seeds and fruits of wild species are more common than remains of cultivated crops, in sharp contrast to the archaeobotanical remains from the later mound of Sang-e Chakhmaq East, although domesticated wheat and barley are present from the earliest levels at Sang-e Chakhmaq West (Tengberg 2014; Roustaei *et al.* 2015).

Previously, dates of *c.* 7100–7000 BC were suggested for occupation at Sang-e Chakhmaq West by several radiocarbon determinations (Harris and Coolidge 2010: 69; Masuda *et al.* 2013: 239; Thornton 2013a: 243). Subsequent programmes of radiocarbon dating (Nakamura 2014; Roustaei *et al.* 2015) confirm occupation at Sang-e Chakhmaq West as occurring from *c.* 7000 to 6700 BC (Table 5.3). The west mound was then abandoned and, after a hiatus of up to 500 years, Late Neolithic occupation started at Sang-e Chakhmaq East from *c.* 6200 BC (see below). Sang-e Chakhmaq thus has a uniquely rich, long sequence of Neolithic occupation for this region of Iran, providing "the key to understanding the spread and adoption of Neolithic lifeways into eastern Iran and southern Central Asia" (Thornton 2013a: 254). Critical to such dispersal is the site's location on the major route-way that formed one strand of the ancient Silk Roads and which today connects Tehran with Mashhad, as well as on a north-south route linking the southern Alborz foothills with the Caspian Sea lowlands and beyond (Tsuneki 2014b). Certainly, the highly sophisticated nature of the architecture in the earliest levels at Sang-e Chakhmaq West does not suggest an experimental engagement with sedentism by local hunter–gatherer communities, but rather the introduction from outside of an already well-developed Neolithic lifestyle, an argument supported by genetic analysis of the spread of barley across northern Iran (Lister *et al.* 2018; Vahdati Nasab *et al.* 2019b: 299).

Further evidence for a Neolithic presence in north-eastern Iran prior to *c.* 6500 BC is attested in ongoing occupation of the Caspian shore rock shelter sites of Komishan, Kamarband (Belt) and Hotu (Figure 5.28) (Coon 1951, 1957; Harris and Coolidge 2010: 56; Gregg and Thornton 2012; Jayez and Vahdati Nasab 2016; Leroy *et al.* 2019; Vahdati Nasab *et al.* 2019b). Excavations at Komishan Cave have identified intensive exploitation of gazelle, birds and marine resources in Epipalaeolithic-Neolithic transitional levels (Mashkour *et al.* 2010). Survey of the Darreh Gaz plain bordering Turkmenistan to the north of the Kopet Dagh range is suggestive of an undated aceramic Neolithic presence at least at site DG 19 (Kohl and Heskel 1980; Harris and Coolidge 2010: 64). Initial research at the site of **Komishani Tepe** (Figure 5.29), close to Komishan Cave on the southern coastal plain of the Caspian Sea, has investigated layers of Epipalaeolithic, Neolithic and later date suggestive of continuity of occupation from the Epipalaeolithic onwards with a strong focus on exploitation of sheep, goat and water birds plus wild oats and wild barley (Leroy *et al.* 2019). At present it is not clear whether or at what point in the sequence of occupation the sheep and goat at Komishani Tepe were domesticated, but this region of the Caspian littoral does

Table 5.3 Sang-e Chakhmaq West and East, radiocarbon dates (Roustaei *et al.* 2015: table 3)

Site	*Lab code*	*Trench no.*	*Phase*	*Context*	*Radiocarbon age (BP)*	*Calibrated 2σ age range (BP)*	*Calibrated 2σ age range (BC)*
East Mound	UBA-13479	2	–	204	6543 ± 27	7423–7499	5550–5474
	UBA-13480	1	1	108	7109 ± 44	7848–8009	6060–5899
	UBA-13555	1	1	123	7297 ± 35	8024–8176	6227–6075
	UBA-13556	1	2	131	7028 ± 30	7794–7936	5987–5845
	UBA-13557	1	4	160	7041 ± 31	7953–7947	5998–5846
	UBA-13558	1	5	182	7271 ± 30	8016–8166	6217–6067
West Mound	UBA-13472	1	1	106	7983 ± 26	8726–8995	7046–6777
	UBA-13473	1	1	112	8005 ± 27	8774–9001	7052–6825
	UBA-13474	1	2	116	8009 ± 27	8847–9006	7057–6825
	UBA-13475	1	3	129	8015 ± 27	8776–9007	7058–6827
	UBA-13476	1	3	134	8026 ± 29	8776–9012	7063–6827
	UBA-13477	1	4	141	8067 ± 32	8780–9089	7140–6831
	UBA-13478	1	4	147	8031 ± 31	8776–9015	7066–6827

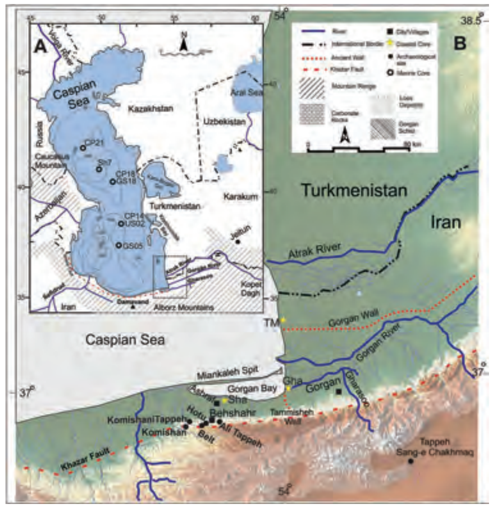

Figure 5.28 Map of south-eastern corner of Caspian Sea to show key sites (Leroy *et al.* 2019: Figure 1) (image courtesy of Suzanne Leroy).

Figure 5.29 Komishani Tepe, view of site with Komishan Cave behind (photo credit: Hassan Fazeli Nashli).

seem to have served as a refuge for a host of plant and animal species, including humans, through the Younger Dryas episode. The botanical and faunal evidence suggests a continuity of development from *c.* 9200 BC for at least a thousand years. Whether or not these locally situated developments truly constitute an autochthonous process of Neolithisation (Leroy *et al.* 2019: 360), whereby local communities shaped their own transition from hunter–gatherer to farmer–herder remains to be investigated by further work at this promising site and region.

Our knowledge of Neolithic south-eastern Iran before 6000 BC is sparse. Earlier notions that the aceramic Neolithic site of **Tall-e Atashi** might attest an Early Neolithic presence in this region have been diffused by more recent research that establishes occupation no earlier than 5600 BC (Garazhian 2016: 49; Mutin and Garazhian 2018; Mutin *et al.* 2020; see below). Systematic intensive survey of the region between Jiroft and the Persian Gulf coast has failed to detect any Neolithic sites (Pfälzner *et al.* 2019). Only one excavated site so far in this entire region appears to predate 6000 BC, although there are claims of a significant but undated aceramic Neolithic presence in the Bam region (Mutin and Garazhian 2018). At **Gav Koshi** (Figures 5.30–5.31) on the Esfandageh plain in Kerman province, radiocarbon dates indicate occupation spanning 7000–6500 BC and 6400–6000 BC, with well-built mudbrick structures with red-painted plastered walls and platforms, painted pottery, figurines and significant quantities of obsidian tools and cores (Soleimani and Fazeli Nashli 2018). Plant evidence recovered from Gav Koshi shows a strong focus on consumption of pistachio nuts with minimal evidence for cereals, while faunal remains are mainly of wild sheep and goat.

Figure 5.30 Gav Koshi, architecture (photo credit: Nader Alidad Soleimani).

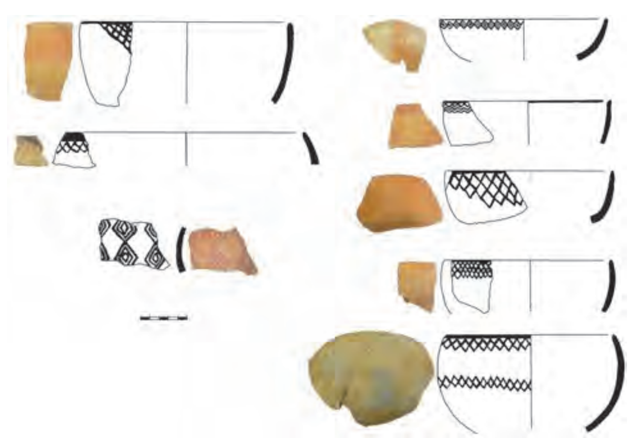

Figure 5.31 Gav Koshi, painted pottery (Soleimani and Fazeli Nashli 2018: Figure 10).

As yet, Neolithic occupation of the high plains and valleys of north-western Iran and of the plains on the plateau of central Iran is attested only after the invention and adoption of pottery as a major component of material culture, that is well after 6500 BC, as discussed in the section below. Despite multiple surveys and excavations in these regions there is so far no indication of Early Neolithic occupation in central and north-western Iran but future fieldwork can of course redraw this picture at a stroke. For the long millennia from *c.* 10,000 to 6000 BC, we must for now envisage these regions as sparsely inhabited by small groups of hunter–gatherers continuing essentially Palaeolithic ways of life and/or by scattered bands of early herders and farmers whose archaeological traces have yet to be identified and explored.

For the time-being, the initial dispersal of Neolithic lifeways outward from the central Zagros appears to be focused on a major movement, of ideas and of people with animals and new herding and farming practices, to the south into Khuzestan via Ilam and beyond into Fars by the late eighth millennium BC and to the west into Iraqi

Kurdistan by the mid-eighth millennium BC. This movement was no doubt rooted in, and developed from, previous centuries of seasonal mobility by local communities of hunter–gatherers. The transmission or development of Neolithic lifeways across northern Iran at sites such as Sang-e Chakhmaq and across southern Iran at sites such as Tall-e Atashi is poorly understood (Vahdati Nasab *et al.* 2019b; Mutin *et al.* 2020; Roustaei and Gratuze 2020). Detailed study of bio-archaeological and cultural remains from both regions, and from yet to be discovered sites in intermediate regions, is necessary before we can delineate the varying influences of local as against imported factors in determining the trajectories of transition from hunter–gatherer to farmer–herder in these regions of Iran and beyond.

Becoming farmers, herders and villagers: the Neolithic climax, 6500–5200 BC

We now focus on the last millennium or so of the Neolithic period, from *c.* 6500 BC. We can view this period as a climax of the Iranian Neolithic because it witnessed the spread and adoption of farming and herding lifeways across all of Iran. Thus, by 5200 BC the vast majority of human communities living in Iran made their living through farming the land and herding their animals rather than through hunting wild animals and gathering wild foods. This shift in use of food resources represents a major change in the human condition that underpins all subsequent social and political developments, in Iran and beyond (Hole 1987c: 30). Without the Neolithic Transition there could have been no permanent villages, no towns and cities and no empires. The rest of this book is about what was made possible by the Neolithic Transition and could not have happened without it.

The significance of ceramics

A major feature of the communities of Iran from *c.* 6750–6500 BC is their widespread adoption of pottery, following several centuries since its first appearances at sites such as Ganj Dareh, Tepe Guran, Sang-e Chakhmaq West, Rahmatabad and Ali Kosh. Potsherds and pottery vessels are arguably the most significant and useful of all types of material culture for the archaeologist studying ancient Iran. Variations and similarities in their technology, forming, firing and decoration provide grist for detailed discussions on chronology, typology and intercultural connections, while also informing us about the people who made and used them (Dyson 1965, 1991; Mortensen 2011; Petrie 2012; Darabi 2015: 92–94; Gibbs 2020). All the Ganj Dareh level D "vessels" were found in storage rooms that had been heavily burnt, probably by an accidental fire so that firing of the unbaked clay vessels may not have been intentional and they should not be regarded as true ceramics (Yelon *et al.* 1992). Local knowledge of lime-firing technology is attested at Ganj Dareh and other contemporary sites, and it is likely that the earliest experiments with pottery manufacture developed out of existing capability in pyrotechnology, as well as from long-standing familiarity with the properties of clay through manufacture of figurines and tokens and through architectural skills in working with *chineh* and mudbrick (Bernbeck 2017; Petrova 2019). The earliest Neolithic pottery of Iran is lightly fired, probably on open campfires, with a moderate temper of chaff, generally coarsely formed with slipped and burnished surfaces. Painted geometric decoration appears in the central Zagros from *c.* 6500 BC as at Sarab (Petrie 2012: 58), and possibly slightly earlier in Fars at sites such as Toll-e Sangi (Khanipour 2021). The common use across Iran of a lightly fired fabric for Neolithic ceramics has led to the identification of a "soft-ware horizon" (Dyson 1965, 1991; Petrie 2011, 2012: 283–284; Weeks 2013a: 57). So far, the only area of Iran to host significant numbers of Neolithic sites lacking evidence for ceramics and dating to later than 6000 BC is Darestan in the southern Lut Desert region, where a relatively dense settlement pattern is dominated by the 12 ha site of Tall-e Atashi (see below; Mutin *et al.* 2020).

The development of ceramic technology is of major significance in our understanding of the prehistoric communities of Iran and its neighbours (Helwing 2012). Prior to its invention, people used containers of basketry, wood, worked stone, leather and felt, as well as storage bins of unbaked clay. With the invention of fired clay vessels, the potential for new modes of storage, processing, cooking and consumption was hugely increased (Gregg 2009). Methods of analysis are increasingly able to recover and identify organic residues from ceramic surfaces, giving some indication of modes and ingredients of ancient cooking including from Iranian Neolithic sites such as Ali Kosh, Tepe Sarab and Tol-e Bashi (Gregg and Slater 2010). Seen in conjunction with the transition from seasonally mobile hunting and foraging to sedentary farming and herding, we can readily appreciate the importance of pottery as a new and flexible agent in a wide range of developing activities, including: large-scale, long-term storage of farming surplus, including dairy products such as milk and yoghurt and plant products such as grain and legumes; new forms of cooking such as frying in oil, boiling, simmering, steaming; new forms of consumption such as communal use of vats, use of serving vessels and individual use of cups and beakers; new forms of personal and social entanglement with material culture through attachment to individual vessels, via decoration, or to particular styles of form and/or decoration of pottery; trade and exchange of vessels within and beyond individuals, communities and regions; and the development of a specialised cadre of skilled potters alongside the domestic-level production of pottery within households.

In addition to its ancient uses and values, pottery is of immense significance to the archaeologist today, not least as one of the most commonly recovered forms of material culture from all sites of Iran and neighbouring regions after *c.* 6500 BC. Sherds of pottery, from surveyed and excavated sites, are used to establish chronologies and sequences of long-term settlement patterns at sites and across regions (Helwing 2012). Ceramics inform us on technological capabilities, on modes of production, distribution and consumption, on local and transregional networks of connection and communication, and on continuities and discontinuities in style and fashion through diverse periods and places. Techniques of analysing lipid residues adhering to vessel surfaces allow us to trace culinary developments such as the increasing significance of cow's milk and other dairy products through the Late Neolithic and beyond (Evershed *et al.* 2008; Gregg and Slater 2010), as well as the origins of wine and beer production and consumption (McGovern 2007, 2009; Tengberg 2012b).

The central and south-central Zagros

As with preceding sections, the first focus in our study of the period 6500–5200 BC is the central Zagros of western Iran. A key site here is **Tepe Guran** (Figure 5.32), levels S-D, radiocarbon dated to cover *c.* 6700–6400 BC (Zeder 2006a: table 14.2; Mortensen 2014). Early pottery from Guran level S is comparable to the material from Ganj Dareh level D (Le Mière and Picon 1998) although later in date. Early painted pottery occurs at Guran from level R and develops into so-called Zagros Standard Ware, which is found at a wide range of sites, from Jarmo in the north to Ali Kosh in the south (Figures 5.33–5.34) (Kozlowski and Aurenche 2005: Figure 13.1; Mortensen 2011; Weeks 2013a: 58; Darabi 2015: 41; Bernbeck 2017). Early Neolithic levels at Guran are succeeded by more substantial, densely packed mudbrick houses with red ochre decoration on the walls and human burials under the floors, in contrast to the secondary burials in Early Neolithic levels at Guran. Goat and sheep dominate the fauna throughout, with little evidence for hunting of other wild animals. The presence of migratory birds reveals some winter occupation (Hole 1987b: 47). From *c.* 6200 BC barley appears and there is more exploitation of animals in addition to goat, including gazelle and deer with also large-scale consumption of land snail, *Helix salomonica.*

In Khuzestan in the south-central Zagros, several of the sites examined above continue in occupation into the Later Neolithic. At Ali Kosh, Chagha Sefid and Chogha Bonut the aceramic Neolithic levels are succeeded by occupation with early pottery, developing from coarse, undecorated wares to painted and burnished vessels (Hole 1987b: 39–40; Voigt and Dyson 1992: 124–125; Alizadeh 2003a; Weeks 2013a: 58). The long-lived site of **Chogha Mish** is first settled at *c.* 6500 BC in the so-called Archaic Susiana 1 period (Delougaz *et al.* 1996; Alizadeh 2008). Chogha Mish sits between the Dez and Karun rivers in northern Susiana, in an area where rain-fed farming without irrigation is possible. From its earliest settlement the site develops through the Archaic Susiana 1–3 periods from a hamlet to a small village over several centuries, with buildings constructed of long cigar-shaped bricks often with parallel finger-drag impressions (Delougaz *et al.* 1996: pl. 54) and burial of the

Figure 5.32 Tepe Guran (right) under excavation in 1963 (Mortensen 2014: Figure 9) (photo credit: Peder Mortensen).

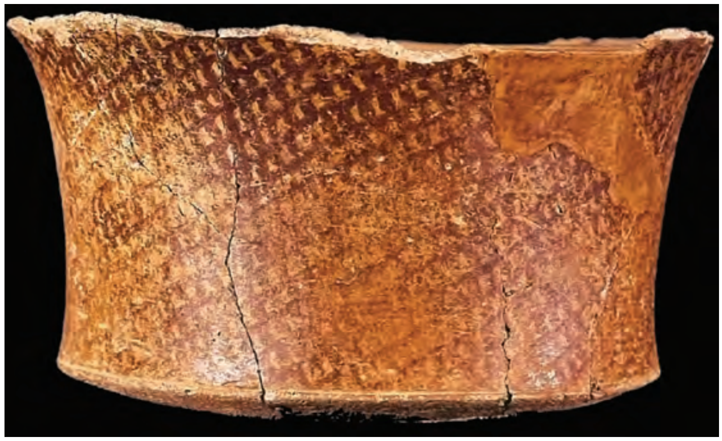

Figure 5.33 Tepe Guran, Zagros Standard Ware, painted pottery (Mortensen 2014: pl. I) (photo credit: Peder Mortensen).

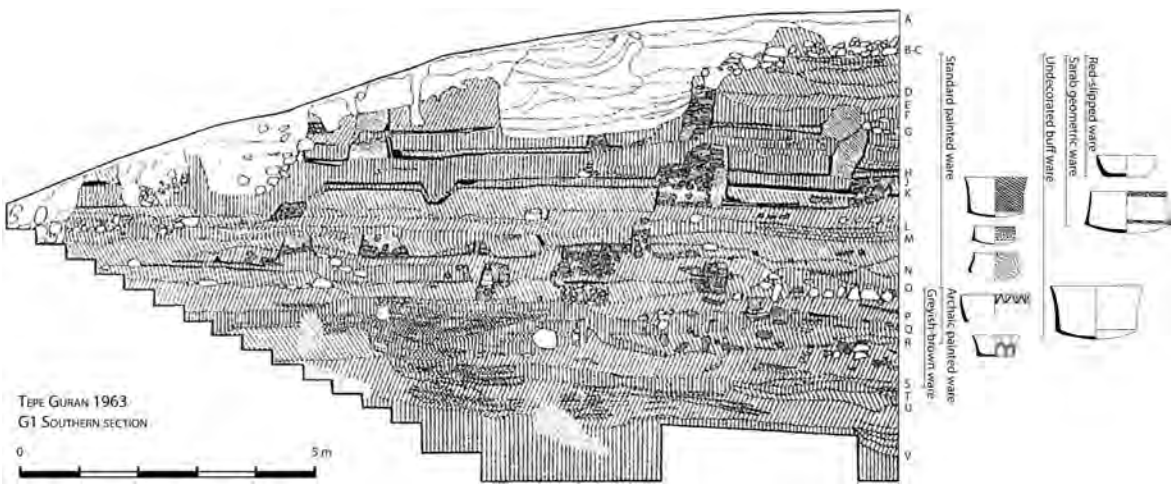

Figure 5.34 Tepe Guran, section through excavations in trench G1 with associated painted pottery types (after Darabi 2015: figs 5.14 and 5.16).

dead under house floors (Alizadeh 2008: 6–9). In the earliest phase the economy of Chogha Mish involved mixed hunting of gazelle, onager and wild cattle alongside herding of domesticated sheep and goat, with domesticated cattle and pigs appearing around 5900 BC, probably introduced from outside (Alizadeh 2008: 6, table 14). Plant remains from Neolithic Chogha Mish show a focus on wild and domesticated forms of legumes, including milk vetch (*Astragalus*) and vetch (*Vicica*) as well as domesticated lentil and pea, with minor emphasis on domesticated cereals such as emmer, einkorn wheat and barley (Woosley 1996: 316; Alizadeh 2008: 9).

Other material culture assemblages from Neolithic Chogha Mish include a rich ground stone industry (Shimabuku 1996) and chaff- and grit-tempered, painted pottery (Figure 5.35) that compares well with contemporary ceramics from a range of Neolithic sites across Susiana and Khuzestan (Delougaz *et al.* 1996: 230–247; Alizadeh 2008: 61–66). By the end of the Neolithic period at Chogha Mish – and there is continuity of occupation into the Chalcolithic period from *c.* 5600 BC (Chapter 6) – the painted pottery shows strong connections with ceramics from central and south Mesopotamian sites to the west, including Umm Dabaghiyah, Chogha Mami and Tell el-Oueili (Delougaz *et al.* 1996: 288; Alizadeh 2008: 65). The possible introduction by the later Neolithic levels at Chogha Mish, at *c.* 6000 BC, of new technologies such as irrigation (Alizadeh 2008: 7–8) and of new domesticated animals such as cattle and pig may well point to influences coming from the northwest, from sites such as Chogha Mami where there is good evidence for irrigation farming and exploitation of cattle and pig alongside sheep and goat (Helbaek 1972; Bökönyi 1978). Indeed, Hole (1977: 35–36) argues for the introduction of irrigation farming onto the Deh Luran plain by farmers coming from the northwest at this time. The long mudbricks

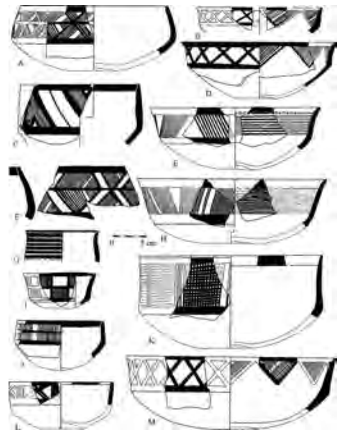

Figure 5.35 Chogha Mish, painted pottery of Archaic Susiana 3 phase (Alizadeh 2008: Figure 66) (courtesy of the Oriental Institute of the University of Chicago).

with distinctive parallel finger grooves are exactly matched at Chogha Mami (Oates and Oates 1976: 64), highly suggestive of movement of people between the two regions. One route of communication between the Late Neolithic sites of central-eastern Mesopotamia and those of Iranian Khuzestan and the south Zagros would have been across the Mehran plain on the western borders of the Zagros, where the as yet undated Neolithic sites of Fasil and Khulaman are situated and where significant numbers of sites with Samarran-style ceramics have been located through surveys (Darabi and Fazeli 2009; Darabi 2020).

The southern Zagros and Fars

The final millennium of the Iranian Neolithic sees a major expansion of farmer–herder communities across Iran and into adjacent regions. Whether or not this expansion can be connected with the so-called 8.2ka BP event of climatic adversity is as yet unproven, although it has been suggested that the Neolithic movement into the Zagros foothills and Fars may have been stimulated by this century-long episode (Nishiaki 2010a, 2018; Weeks *et al.* 2006: 24; Abe and Khanipour 2019; Darabi 2020). One of the problems is that we know so little about Neolithic presence across the large stretch of mountains, hills and high plains situated between the central Zagros and the southern Zagros, essentially the rugged Bakhtiyari region. Our knowledge is limited to the site of **Qaleh Rostam** on the plain of Khana Mirza at 1900 m above sea level (Nissen and Zagarell 1976; Zagarell 1982; Bernbeck 1989, 2017; Gebel 1994; Daujat *et al.* 2016), where pottery shows a local development from low-fired, chaff-tempered wares to painted and burnished red wares. Following initial settlement in the later eighth

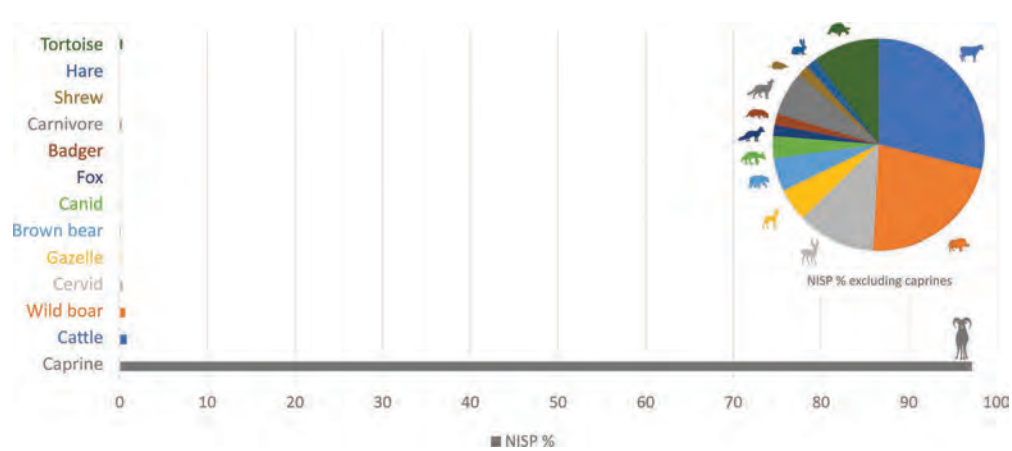

Figure 5.36 Qaleh Rostam, Neolithic faunal assemblage by NISP and weight (after Daujat *et al.* 2016: Figure 6).

millennium BC (see above), radiocarbon dates span much of the seventh millennium BC but with major gaps (Daujat *et al.* 2016: 109).

Detailed analysis of the Qaleh Rostam faunal assemblages (Figure 5.36) shows massive representation of caprines at 97% with goat, possibly domesticated from local wild populations, more common than sheep, both wild and domesticated, and minor quantities of cattle, wild boar, deer, gazelle and hare. Analysis of goat teeth suggests occupation at Qaleh Rostam spanning early spring to autumn with seasonal abandonment during the extremely harsh winters at this altitude where temperatures can drop to -25°C (Daujat and Mashkour 2017). Archaeobotanical remains, including emmer wheat (*Triticum dicoccum*), pistachio nuts and almonds, tend to support the interpretation of spring and summer occupation, while pollen and phytolith evidence suggest conditions increasingly favourable for agriculture and animal herding in this highland zone (Daujat *et al.* 2016: 123). The communities attested at Qaleh Rostam may therefore have practised vertical transhumance involving cyclical mobility between lowland villages, such as those attested in Khuzestan, and upland base camps. Other surveyed sites of the region have chipped stone assemblages comparable to those of the central Zagros, with bullet cores, blades and bladelets, little trace of sickle sheen and infrequent occurrence of obsidian (Zagarell 1982). These attributes broadly align Qaleh Rostam and its associated sites with contemporary developments in the central Zagros. In the mountainous region to the south of Qaleh Rostam, archaeological surveys have detected Later Neolithic sites in the Farsan region in the north-western Bakhtiyari mountains, all located near to springs and streams (Khosrowzadeh 2016). Ceramics from these sites show stylistic parallels with ceramics from Fars to the southeast and Khuzestan to the southwest. As with Qaleh Rostam, it is hard to believe that Neolithic farmers could have over-wintered in this severe environment.

Amongst the excavated sites of Fars, the mound of **Rahmatabad** has occupation spanning the transition from Early to Later Neolithic (Bernbeck *et al.* 2005, 2008; Azizi Kharanaghi *et al.* 2013, 2014a; Nishiaki *et al.* 2013). Radiocarbon dates indicate occupation spanning from the late eighth millennium BC through the Neolithic and into the Early Chalcolithic. The painted ceramics from Rahmatabad are comparable to contemporary material from Tal-e Mushki and Tol-e Bashi, with simple geometric designs painted on chaff-tempered wares. Chipped stone tools from Rahmatabad, however, are in the M'lefaatian tradition as attested at multiple Early Neolithic sites of the central Zagros and adjacent regions, with especially strong linkages to lithic assemblages of the Deh Luran plain (Nishiaki *et al.* 2013). These connections might suggest an ultimate origin for the Rahmatabad settlers from the central and south-central Zagros rather than an autochthonous development in Fars. Compared to the Early Neolithic occupation (see above), the archaeobotany of Later Neolithic levels at Rahmatabad (Figure 5.37) shows an enhanced focus on hulled wheats including emmer and, more rarely, einkorn as well as barley. Pistachio and almond are also present in these levels, which see a decrease in use of wild, small-seeded pulses and in species associated with wetland habitats such as lakes and riverbeds, possibly indicative of the development of more arid conditions by the Later Neolithic (Tengberg and Azizi Kharanaghi 2016). The 6.5-ha large site of **Qasr-e Ahmad**, 100 km south of Rahmatabad, also spans the Early to Later Neolithic of Fars, with use of obsidian from both Nemrut Dağ and Bingöl sources (Bernbeck *et al.* 2006; Barge *et al.* 2018). A radiocarbon date suggests occupation here by *c.* 7000 BC enduring for up to 500 years. Plant remains from Qasr-e Ahmad include wild and

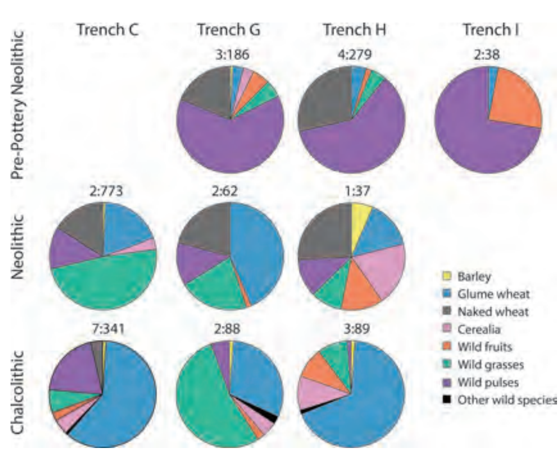

Figure 5.37 Rahmatabad, relative proportions of plant categories across trenches and periods (after Tengberg and Azizi Kharanaghi 2016: Figure 3).

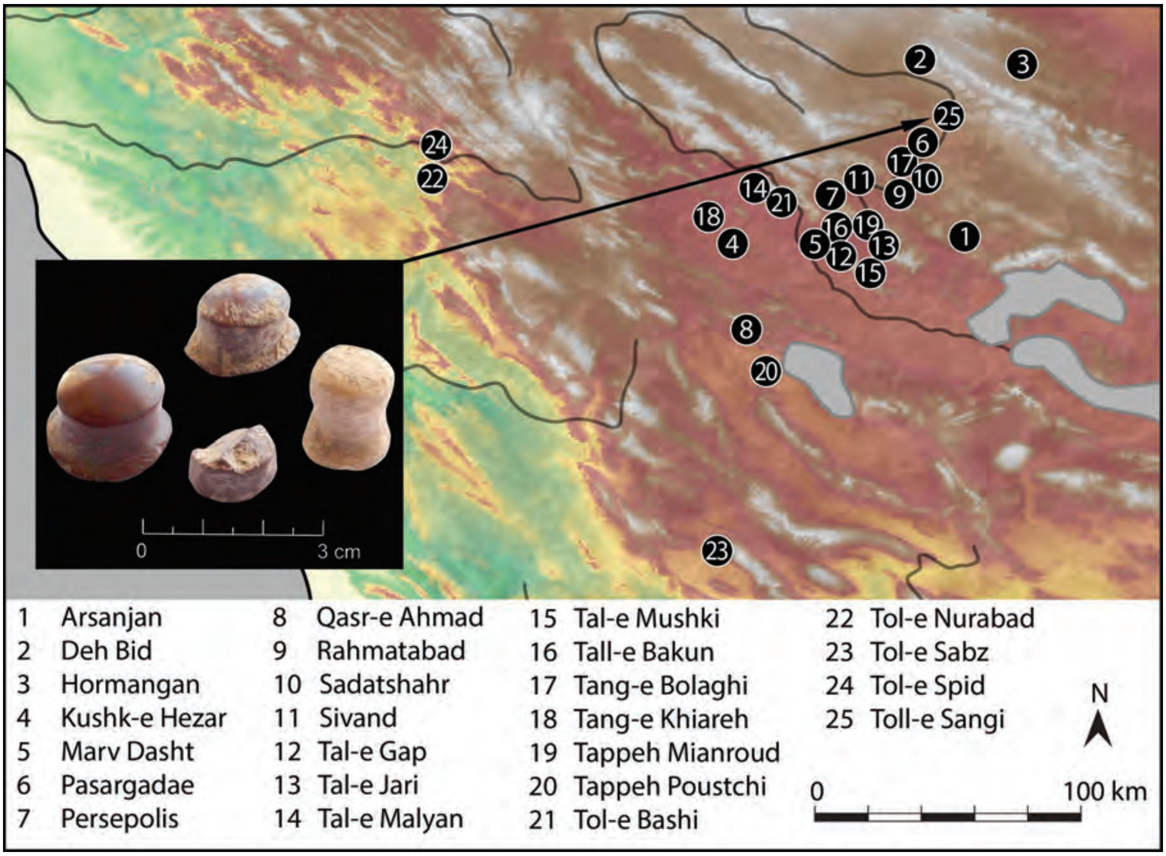

Figure 5.38 Prehistoric sites of the Fars region (Azizi Kharanaghi *et al.* 2013: Figure 9.1). Inset: Toll-e Sangi, possible lip-plugs or earspools of stone and clay (Khanipour 2021: Figure 5) (photo credit: Morteza Khanipour).

domesticated wheat and barley alongside wild plants and nuts, while the zooarchaeological assemblage is dominated by wild and domestic goat with much smaller representations of sheep, cattle and pig (Safoora *et al.* 2018).

The Kur river basin region of Fars, northeast of Shiraz, has been the focus of major research projects that have included the Neolithic period within their agendas (Figure 5.38) (Fukai *et al.* 1973; Egami *et al.* 1977; Sumner 1977; Potts and Roustaei 2006; Weeks *et al.* 2006; Nishiaki 2010a, 2010b; Pollock *et al.* 2010; Weeks 2013c). Apart from the Early Neolithic occupation attested in the Tang-e Bolaghi and Arsanjan regions and at Tepe Rahmatabad, as discussed above, the earliest Neolithic occupation of Fars dates to *c.* 6400 BC. Three key sites have given their names to sub-phases of the Neolithic of Fars: Tal-e Mushki (6400–6100 BC), Tol-e Bashi (6100–6000 BC) and Tal-e Jari A and B (6000–5000 BC), although there is debate over the duration of each of these phases (Alden *et al.* 2004: Figure 2; Abe and Khanipour 2019: Table 1). At **Tal-e Mushki**, architecture of *chineh* and mudbrick occurs in the earliest levels, and the ceramics include burnished wares painted with geometric designs, in a style that seems to have originated in the region. The wide distribution across Fars of sites with Mushki ceramics, usually located next to large springs, suggests a strong network of regional engagement (Sumner 1977: 303; Pincé *et al.* 2019) reaching into the high mountain passes as attested at Tang-e Khiareh at 1650 m above sea level where a small Mushki-related site is located (Zeidi *et al.* 2016). Early experimentation with native copper in the production of small objects is also attested at several Neolithic sites of the region (Weeks 2012: 296). Lithics from Neolithic Tal-e Mushki are in the Late M'lefaatian style with increasing representation of sickle blades and geometric tools (Nishiaki 2018), while radiocarbon dates confirm the site's Neolithic occupation as spanning a few centuries around 6200 BC (Nishiaki 2010b).

While the plant remains at Tal-e Mushki indicate cultivation of domesticated barley, emmer and einkorn (Miller and Kimiaie 2006: Table 7), the faunal remains show a strong emphasis on hunting of wild animals including onager, aurochs and gazelle (Mashkour *et al.* 2006: Table 2). Surprisingly, goats appear to be largely wild and there are no sheep (Zeder 1991: 60). Diachronic study of the faunal assemblages from Mushki and from Jari A and B shows a vivid switch from hunting of onager and gazelle to herding of domesticated goat (Mashkour *et al.*

2006: Table 3). It appears that, unlike the earliest Neolithic settlement of Khuzestan, the early farmers of the Kur river basin did not bring the practice of goat-herding with them, or that they abandoned the practice on settling down in the region, perhaps because of the wealth of wild animal resources at their disposal or as a response to climatic adversity attendant upon the 8.2 ka BP event (Weeks 2013c: 103). The subsequent decline in hunting and the corresponding increased emphasis on herding of domesticated animals is also detectable in the chipped stone tools from Tal-e Mushki as compared to Tal-e Jari B, with a drop in geometric arrow heads matched by a surge in sickle blades (Abe 2011: 168). Particularly notable amongst the finds from Mushki are a total of 391 "earspools" mainly of clay. Hole (1987b: 53) suggests the possibility that these objects, whether or not really used as earspools, were being manufactured at Mushki for both local and regional use.

As discussed above, initial excavations at **Toll-e Sangi** in north-eastern Fars suggest significant occupation through the Early-Later Neolithic transition, *c.* 7100–6800 BC, with stone tools of chert and obsidian, pounders for processing red pigment, human and animal figurines, plus polished stone and clay objects that may have functioned as lip-plugs or earspools (Figure 5.38) (Khanipour 2021: Figure 5). Earspools also occur in significant quantities in clay and stone at the upland site of **Hormangan** in north-eastern Fars, which has yielded rectilinear *chineh* architecture, preceded by a phase of ash lenses and hearths without architecture (Khanipour and Niknami 2017: Figure 6; Khanipour *et al.* 2018). Radiocarbon dates place the earlier phase at *c.* 6400–6200 BC and the later phase at *c.* 6200–6000 BC (Abe and Khanipour 2019: Table 2). Lithic tools from this site are very much in the Zagros Late M'lefaatian tradition, as at Mushki, with abundant geometrics in the form of lunates and trapezes as well as sickle blades with gloss (Figure 5.39) (Abe and Khanipour 2019: Figure 7). Only a single obsidian blade has been recovered from Hormangan, as yet of unknown origin. A dominance of hunting tools, in the form of geometrics, over tools of cultivation, such as sickle blades, is matched by a strong representation of hunted wild animals such as gazelle and onager with lesser quantities of domesticates including goat. As at Mushki, these associations have been interpreted as possible evidence of a major shift in food procurement strategy as a direct consequence of the 8.2 ka BP cooling event (Abe and Khanipour 2019).

Figure 5.39 Hormangan, chipped stone tools (Abe and Khanipour 2019: Figure 7) (permission courtesy of Morteza Khanipour).

Through the sixth millennium BC in the Kur river basin, the sites of **Tol-e Bashi** and **Tal-e Jari A and B** demonstrate the increasing significance of goat, sheep and cattle herding and a corresponding decline in hunting of wild animals (Mashkour *et al.* 2006; Weeks 2013c). At Tol-e Bashi goat and sheep were the main herded animals while hunting of gazelle continued (Mashkour 2010). At **Tol-e Nurabad** and **Tol-e Spid** in the Mamasani region of Fars, the economy is heavily based on herding of sheep and goat, with no hunting at all of gazelle (Mashkour 2006a). Plant remains at Tol-e Bashi include cultivated cereals such as wheat and two-row barley as well as a range of wild plants, including reeds and grasses (Kimiae 2010). More broadly, all the ceramic Neolithic sites of Fars show a strong reliance on domesticated cereals, including einkorn, bread wheat and two-row barley along with exploitation of pistachio and almond but with a notable absence of cultivated pulses (Tengberg and Azizi Kharanaghi 2016: 137), a feature also of Neolithic sites of north-eastern Iran (see below). As Weeks has pointed out (2013c: 101; Pincé *et al.* 2019), the lavish use of agricultural by-products such as straw and chaff as pottery temper is further indication of the importance of cereal-based agriculture in the region, as is the increased evidence for use of chert sickle blades (Nishiaki 2013, 2018). Bernbeck's (2010) highly detailed "microstylistic" analysis of painted motifs on ceramics from Tol-e Bashi (Figure 5.40) innovatively proposes the identification of individual potters at work. Rectilinear, multi-roomed houses of mudbrick and *chineh* are a common feature of all the Kur river basin sites as well as of Tol-e Nurabad in the Mamasani region of north-western Fars (Potts and Roustaei 2006; Weeks *et al.* 2006; Weeks 2013c). On the south-western fringes of the city of Shiraz the Later Neolithic site of Tappeh Poustchi is located on the little explored Shiraz plain to the west of Lake Maharlou (Hamzavi and Zeidi 2016). Ceramics from the site suggest a date in the first half of the sixth millennium BC. Ancient springs and major natural watercourses across the Shiraz plain, now all dry, could have attracted and supported significant prehistoric populations across its fertile soils. Similarly, Later Neolithic occupation of the Marvdasht and Firuzabad plains is attested at Tappeh Mianroud and Tol-e Sabz, respectively, with rich assemblages of painted Neolithic ceramics (Mansouri and Ahmady 2015; Ebrāhimi *et al.* 2016).

By 5500 BC we can therefore view the entire Fars region as occupied by settled farmers living in small villages on the plains, cultivating a range of domesticated cereals in their fields, herding their flocks of sheep and goat in

Figure 5.40 Tol-e Bashi, painted pottery with typical motifs (Bernbeck 2010: 149) (permission courtesy of Reinhard Bernbeck).

daily and seasonal patterns of movement, and making and using a range of artefacts largely derived from locally available resources. A few more exotic items such as obsidian, seashells, copper lumps and bitumen pieces suggest some engagement, however indirect, with a world beyond the valley. Several millennia later, it would be on this agricultural foundation in this region of Iran that the great Achaemenid empire of the Iron Age would be constructed (Chapter 11).

South-eastern Iran

Looking southeast from Fars, the Neolithic of the Kerman region of south-eastern Iran is poorly understood. Following the earlier settlement at **Gav Koshi** near Jiroft (see above), occupation of early sixth millennium BC date has been found at several sites in the Shah Maran-Daulatabad valleys (Prickett 1986b: 223–224). Here the mound of **Tepe Gaz Tavileh** (or R37) is one of a cluster of apparently contemporary Neolithic sites that suggest a significant Later Neolithic presence in the region, with mudbrick domestic architecture attested at the site. Faunal remains from Gaz Tavileh are dominated by domesticated goat, sheep and cattle and exploited plants include cereals (wheat, barley, millet) supplemented by dates and caper (Meadow 1986). The very early occurrence of date stones from Gaz Tavileh lends support to the suggestion that this region may host the origins of date palm cultivation (Tengberg 2012b: 196), a development of major significance for the region and well beyond. The fact that zebu cattle (*Bos indicus*) are represented in bone assemblages from Gaz Tavileh (Meadow 1986: 37) is also striking because of their extremely early date. Zebu are domesticated to the east in South Asia and are attested at *c.* 6000 BC at Mehrgarh in Pakistan (Meadow 1984). From archaeological and aDNA evidence zebu cattle can be tracked in movements westwards across Iran and into Mesopotamia, Anatolia and the Levant through the Chalcolithic, Bronze and Iron Ages (Matthews 2002a; Verdugo *et al.* 2019; Frantz *et al.* 2020).

At the nearby multi-period site of **Tepe Yahya** in the Soghun valley, ceramic Neolithic occupation, of level VII, dates to the late sixth and early fifth millennia BC (Beale 1986; Voigt and Dyson 1992: 147–151) and features rectilinear mudbrick buildings (Figure 5.41), some likely for storage, and a possible external cemetery of human

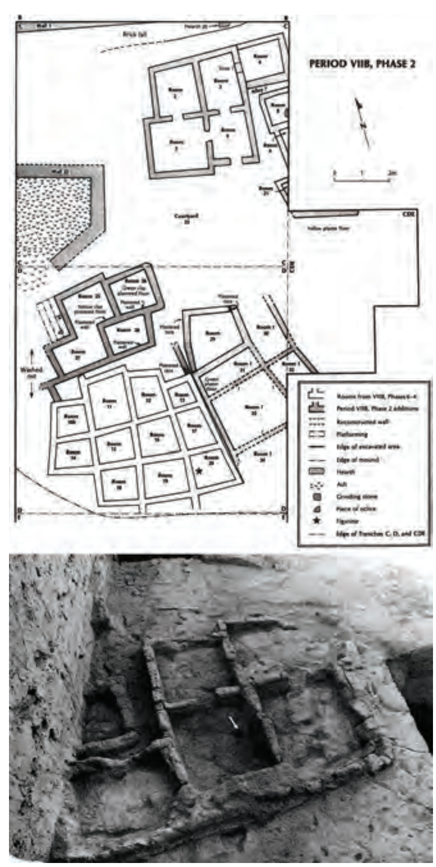

Figure 5.41 Tepe Yahya, level VIIB.2 architecture (Beale 1986: Figures 6.8–6.9) (images courtesy of C. C Lamberg-Karlovsky).

Figure 5.42 Tepe Yahya, chlorite figurine (Beale 1986: figs 7.17, 7.29) (image courtesy of C. C Lamberg-Karlovsky).

burials with traces of red pigment. Pottery is coarse and chaff-tempered with rare painted decoration, and there is evidence for use of copper in production of small artefacts such as pins and tacks (Thornton *et al.* 2002; Thornton and Lamberg-Karlovsky 2004). A notable find is a large human figurine (26.6cm long) of locally available chlorite (Figure 5.42), deliberately buried with three bone tools (one of which appears to be a kind of wand), 63 lithic pieces and three grooved stones (Lamberg-Karlovsky 1970: 113, pls. 42–43; Beale 1986: Figures 7.16–7.17, 7.25–7.29). These objects were deliberately placed on the floor of one of the small rooms, perhaps as an offering of some kind. The human figurine displays a unique blend of male and female sexual characteristics (Daems 2001: 5). Clay tokens in the form of cones and spheres are common. Goat and sheep are the main herded animals (Meadow 1986), while barley and wheat (emmer and einkorn) are the principal crops, a package strongly suggestive of whole-sale introduction from outside the region. To the northwest, level I at **Tal-e Iblis** consists of well-constructed mudbrick houses with red-plastered floors. The occupants herded goat, sheep and cattle while still hunting aurochs, gazelle and onager, and there are indications of early experiments with copper (Caldwell 1967).

Investigations at the site of **Tall-e Atashi** (Figure 5.43) in the region of Bam in Darestan indicate an aceramic Neolithic presence on a substantial scale, with architecture and lithic scatters over a total area of up to 12 ha (Garazhian 2009, 2016; Garazhian and Shakooie 2013; Mutin and Garazhian 2018; Mutin *et al.* 2020). Chipped stone tools are of chert with no obsidian (Jayez and Garazhian 2013; Shakooie and Garazhian 2013), and items such as clay figurines, tokens, miniature vessels, and a polished stone bowl suggest connections with Neolithic sites to the west. There is some trace of an early phase of circular architecture, before a shift to rectilinear structures, which may indicate a local evolution of architectural tradition rather than an imposition from outside. But the use of thumb-impressed mudbricks and the lithic assemblages at Atashi connect the site with Neolithic levels at Tepe Yahya, Tal-e Iblis, Tepe Sialk period II and Mehrgah period I (Mutin *et al.* 2020: 6).

Figure 5.43 Tall-e Atashi, views of site and architecture (photo credit: Omran Garazhian).

Although apparently a Pre-Pottery Neolithic (or better, aceramic Neolithic) site, radiocarbon dates suggest an occupation at Atashi spanning or within *c.* 5600–4600 BC (Garazhian and Rahmati 2012; Garazhian 2016: 49; Mutin *et al.* 2020: 9), a dating that indicates a late survival or appearance of aceramic Neolithic occupation in this region. Plants exploited by the inhabitants of Atashi included domesticated wheat and barley plus wild grasses, pulses and oil-seed plants. Food storage and cooking practices employed by the Atashi people may perforce have differed significantly from those of their ceramic-rich contemporaries across Iran.

Surface survey identification of 64 Neolithic sites in Darestan, of which 25 lacked any Neolithic ceramics, altogether reveal a significant Neolithic presence in this region, with some suggestion of settlement movement according to water availability (Mutin *et al.* 2020: 9), always a critical factor. The total absence of pottery at Tall-e Atashi and at many other Neolithic sites of the southern Lut desert region remains something of a mystery, given the adoption of ceramic technology in Fars and other regions of Iran at least several centuries prior to the Neolithic occupation of Atashi and its region. Mutin and colleagues (Mutin *et al.* 2020: 13) situate this attribute within the context of Neolithic sites to the east, such as Mehrgah in Pakistan, together constituting a late aceramic Neolithic horizon of the Indo-Iranian borderlands, and probably supporting an interpretation of external origins for the Neolithic of this region through processes of diffusion, whether demographic, cultural or both.

North-western Iran and the Caucasus

The Neolithic of north-western Iran begins at 6500 BC at the earliest, apparently predating the 8.2 ka BP event but our knowledge of the region is limited: a major issue is a lack of fieldwork focused on the Neolithic period. Between 10,000 and 6500 BC we have no evidence for human presence across the regions of the north Zagros, the Lake Urmia basin and Iranian Azerbaijan, arguably due to the excessively cold and dry climate of the Early Holocene in this region (Bottema 1986; Kelts and Shahrabi 1986). Preliminary publication by Tala'i (1984) and Ajorloo (2008, 2016) of survey and excavation in Iranian Azerbaijan includes ceramic material from several sites that appears to pre-date the earliest known pottery from the site of Hajji Firuz Tepe (Voigt 1983). Especially significant are the sites of **Ahrendjan** and **Qara Tepe** on the Salmas plain to the northwest of Lake Urmia (Tala'i 1984; Ajorloo 2008: 112–113, 2016). The Salmas plain is situated on multiple connecting natural routes of communication, with access to and from the Caucasus to the north, the Lake Urmia basin and the Zagros to the south, Lake Van and eastern Anatolia to the west, and the Mughan plain and the Caspian region to the east. Excavations at Ahrendjan and Qara Tepe recovered chaff-tempered pottery, a rich ground-stone industry, tools of obsidian originating from Lake Van, only 120 km to the northwest, and possibly from other sources too including Syunik in Armenia (Niknami *et al.* 2010; Barge *et al.* 2018), and clay spindle whorls. As at Hajji Firuz Tepe, the pottery from Ahrendjan and Qara Tepe (Figure 5.44) compares well to assemblages from Mesopotamian sites such as Umm Dabaghiyah and Hassuna but seems to be associated more with dairy produce rather than grain processing. To the southeast of Tabriz, east of Lake Urmia, the multi-period mound of Değirmen Tepe also hosts occupation of ceramic Neolithic date (Ajorloo 2008: 113–114). Ahrendjan, Qara Tepe and Değirmen Tepe are important indicators of the earliest Neolithic of the region but their occupation cannot be dated to earlier than *ca.* 6500 BC and is probably later. A critical factor in the early appearance of Neolithic

Figure 5.44 Painted pottery from Ahrendjan and Qara Tepe (after Ajorloo 2016: Figure 4).

settlement of the region is likely to have been the environment: by the sixth millennium BC an increasingly wet climate enabled the development of grasslands, meadows and woodlands in the Urmia basin (Kelts and Shahrabi 1986). As to the origin of the Neolithic of Iranian Azerbaijan, Ajorloo (2008, 2016) argues that ceramic parallels between assemblages from Ahrendjan and Qara Tepe with those from Sarab, Guran and Jarmo point strongly to the central Zagros region as a source for diffusion northwards of early farming and herding communities travelling with their plants and animals.

A key site is the multi-period mound of **Yanik Tepe** near Tabriz (Burney 1964; see Chapter 8). Over 5 m of Neolithic occupation at Yanik starts from *c.* 6200 BC, with well-developed rectilinear architecture of mudbrick. Walls and floors were plastered with gypsum and painted with red pigment in patches. Human burials were placed under room floors. Objects include many alabaster bowl and bracelet fragments, comparable to those from Neolithic sites of the Zagros, and bone and obsidian tools using obsidian from south Caucasian and north Iranian sources (Orange *et al.* 2021). A small stone figurine takes the form of a human head with clear representation of artificial cranial elongation (Figure 5.45) (Burney 1964: pl. 15.11), also a key trait of the Zagros Neolithic (Lorentz 2010). Chaff-tempered pottery, occasionally painted, compares well to Neolithic ceramics from Hajji Firuz to the southwest of Lake Urmia (Voigt 2011). The alabaster bracelets and evidence for cranial elongation suggest a Zagros origin for the Neolithic settlers of the Lake Urmia basin rather than a development from local hunter–gatherer communities, until now conspicuous by their absence from the archaeological record. Future survey and excavations may well overturn this interpretation.

The most fully excavated, analysed and published Neolithic site of north-western Iran (and well beyond) is **Hajji Firuz Tepe** (Voigt 1977, 1983, 2000; Hole 1987b: 44–45), situated at 1300 m above sea level in the fertile Ushnu-Solduz valley to the south of Lake Urmia. Occupation at Hajji Firuz dates to the first half of the sixth

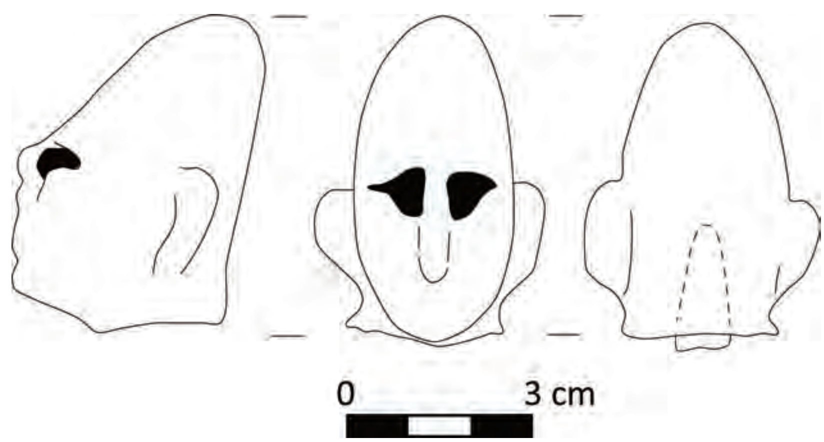

Figure 5.45 Yanik Tepe, human head figurine of stone with clay plug (after Burney 1964: pl. 15.11).

Figure 5.46 Hajji Firuz Tepe, general view of excavations in 1968 (photo credit: Mary Voigt).

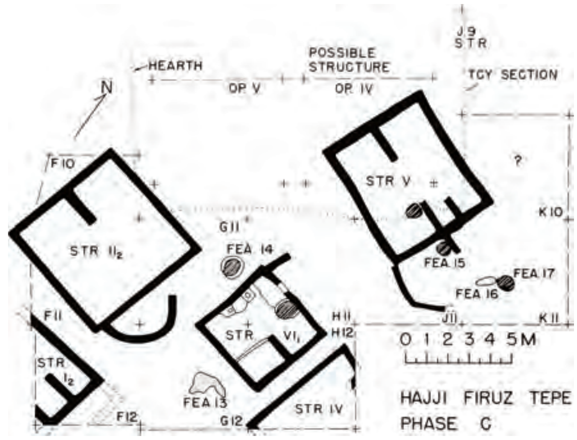

Figure 5.47 Hajji Firuz Tepe, phase C architecture (after Voigt 1983: Figure 15) (permission courtesy of Mary Voigt).

Figure 5.48 Hajji Firuz Tepe, deposit of human remains (photo credit: Mary Voigt).

Figure 5.49 Hajji Firuz Tepe, painted pottery (after Voigt 1983: Figure 93) (permission courtesy of Mary Voigt).

millennium BC (Tonoike 2009). As at Yanik Tepe, the Neolithic architecture at Hajji Firuz (Figures 5.46–5.47) consists of very neat rectilinear mudbrick buildings plastered with lime and with traces of red and black paint. Internal features include ovens and plaster storage bins. There are many human burials below floors, as well as so-called "ossuary burials" comprising both primary and secondary interments with red pigment (Figure 5.48). Typical Neolithic chaff-tempered pottery is common, sometimes decorated by incision and paint (Figure 5.49) (Voigt 2011), and there is a range of ground stone items and tools of bone and obsidian originating from Armenian sources directly to the north (Barge *et al.* 2018). Of some significance are the figurines from Hajji Firuz, fully studied by the excavator, Mary Voigt (1983, 2000; Daems 2004: 11). Her analysis detected differential spatial distribution of the varying figurine types, whether cones, human, animal or so-called "sealings" (not impressed by seals), as well as deliberate ancient breakage of all the recovered figures and their association with ash-filled pits. Her conclusion is that most figurines were "vehicles of magic and therefore documented ritual behaviour" (Voigt 2000: 264), an interpretation supported in a contextual analysis of clay tokens from Hajji Firuz and other sites (Palka 2020).

Plant remains from Hajji Firuz show a fully agricultural aspect, with cultivation of barley, wheat and lentils along with use of a range of wild species (Voigt 1977: 316–317). Hajji Firuz has yielded the earliest convincing evidence for wine production, detected through liquid chromatography of organic residues in storage vessels set into the floor of a room identified as a kitchen (McGovern 2007: 64–68; Tengberg 2012b: 186–187). Traces of a pistachio-based resin in the same residues suggest the production of a type of *retsina*. Domesticated sheep and goat were the main herded animals, combined with pig and dog, and hunting of aurochs, red deer and wild pig also took place (Voigt 1977: 318–320). Voigt interprets many of the pottery vessels as having a function within dairy processing and storage, an interpretation strengthened by more recent analysis of milk residue on vessels from seventh millennium BC sites in Southwest Asia and Southeast Europe (Evershed *et al.* 2008). Concerning the origin of the first settlers at Hajji Firuz, on the basis of the pottery Voigt (1983: 166) argues for connections across the northern Zagros to the west into Upper Mesopotamia, with sites such as Telul eth-Thalathat, Sotto and Umm Dabaghiyah. Once more there is no evidence for a development in this region of sedentary Neolithic society out of local hunter–gatherer groups.

Further to the north, beyond the great Aras/Araxes river, the earliest Neolithic sites of the southern Caucasus, such as Göytepe and Hacı Elamxanlı Tepe in western Azerbaijan (Guliyev and Nishiaki 2012; Nishiaki *et al.* 2015a, 2015b; Nishiaki and Guliyev 2020), Kültepe I in Nakhchivan (Marro *et al.* 2019) and Aruchlo in Georgia (Hansen *et al.* 2007; Lyonnet *et al.* 2012), with their packed clusters of circular buildings, knob-adorned pottery, and tools of obsidian obtained from relatively local sources in Georgia, Armenia and north-eastern Anatolia (Nishiaki *et al.* 2019), all date to the sixth millennium BC with little evidence for evolution from a local Pre-Pottery Neolithic presence, at least in terms of agropastoral practices (Nishiaki *et al.* 2015a). DNA analysis on Neolithic sheep and cattle from Aruchlo indicates their introduction to the southern Caucasus from an as yet unidentified external source (Benecke 2017). Recent work on the Mil plain of southern Azerbaijan, close to the border with Iran, has detected a dispersed Late Neolithic presence of mid-sixth millennium BC date with plausible connections both westwards to the Halaf world of Upper Mesopotamia and southwards to the highlands of north-western Iran (Helwing *et al.* 2017; Helwing and Aliyev 2018; Ricci *et al.* 2018). In sum, much research remains to be conducted into the origins and chronology of the Neolithisation of this region (Chataigner *et al.* 2014; Sagona 2018).

The central and northern plateaux

The Neolithic arrives late and fully formed on the central and northern plateaux of Iran, as far as present understanding goes, possibly coinciding with an episode of increasing precipitation (Schmidt *et al.* 2011; Vidale *et al.* 2018). The earliest known Neolithic site on the Kashan plain, hard against the foothills of the Karkas mountains, may be the site of **Tepe Shurabeh**, which has sherds of primitive soft-ware probably dating to the early sixth millennium BC (Malek Shahmirzadeh 2006: 13). Located only 5 km east of Shurabeh, the large north mound of **Tepe Sialk** (Figure 5.50) on the Kashan plain is especially important (Ghirshman 1939; Mellaart 1975: 187–190; Malek Shahmirzadeh 2006; Fazeli Nashli *et al.* 2013a; Kourampas *et al.* 2013; Fazeli Nashli and Nokandeh 2019; Matthews 2019). Sialk lies in an ecotone between the Karkas mountains to the west and the central plateau to the east. Ghirshman's excavations in level I at Sialk North recovered disarticulated traces of light structures of reeds and mud succeeded by structures of *chineh*. Human burials were placed below floors and coated with red pigment, with infants buried in pots and lacking grave goods (Sołtysiak and Fazeli Nashli 2010). Domesticated goats along with barley and emmer wheat and agricultural tools, including sickle blades (Thomalsky 2016: 176; Ilkhani *et al.* 2019), suggest the full-scale practice of farming from the earliest occupation of the site alongside hunting of gazelle, wild sheep and cattle. Micromorphological analysis shows the presence in the earliest levels of trampled and burnt dung deposits, from stabling of domesticated animals (Kourampas *et al.* 2013: 195). There are some basic artefacts of cold-worked native copper (Pigott 1999: 74), and chaff-tempered pottery is common

Figure 5.50 Tepe Sialk North, aerial image (Fazeli Nashli and Nokandeh 2019: Figure 2.3) (photo credit Loghman Ahmadzadeh).

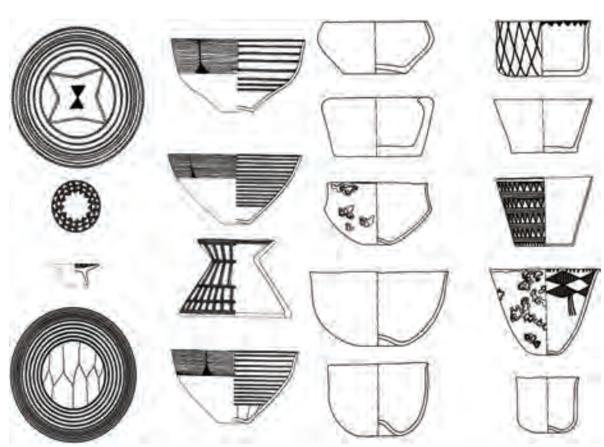

Figure 5.51 Tepe Sialk North, Late Neolithic painted pottery (Fazeli Nashli and Nokandeh 2019: Figure 2.5).

(Marghussian *et al.* 2017). More recent work at Sialk North has established the chronology of occupation with multiple radiocarbon dates (Fazeli Nashli *et al.* 2013a: 127–128, Table 10.2). These dates suggest a duration of 800 years for the Neolithic at Sialk North, starting from *c.* 6000 BC with abandonment at the end of the sixth millennium BC. Renewed occupation at Sialk South then starts from *c.* 4100 BC after a long hiatus (Chapter 6). Neolithic ceramics from Sialk North are chaff-tempered and through time show increasing connections with other Late Neolithic communities of the broader region (Figure 5.51). Survey of the Arisman region directly southeast of Sialk recovered Neolithic evidence from three sites one of which, Tappe Mesi, yielded a distinctive lithic bladelet assemblage that may betoken an aceramic Neolithic presence in this region (Helwing *et al.* 2011).

Northwards from the Kashan plain, Late Neolithic occupation is attested in the narrow strip of habitable land between the central deserts to the south and the Alborz mountains to the north. With the possible exception of Qaleh Asgar (see above; Biglari 2012), settlement on the plains south of Tehran does not appear to pre-date *c.* 5600 BC (Fazeli *et al.* 2004; Fazeli Nashli *et al.* 2013a). The mound of **Cheshmeh Ali** has an unbroken sequence of occupation from Late Neolithic through Transitional Chalcolithic and Early Chalcolithic, with ceramics comparable to those from Sialk North level I. Late Neolithic ceramics have been excavated at **Tepe Pardis**, also on the Tehran plain, and again appear to date to the later sixth millennium BC, as attested also at Ismailabad (Tala'i 2000). Neolithic settlement on the fertile Qazvin plain has been investigated at several sites, in particular Chahar Boneh, Tepe Ebrahimabad and Mai Tappeh (Mashkour *et al.* 1999; Fazeli *et al.* 2005; Fazeli Nashli *et al.* 2009, 2013a; Sarlak 2016). Occupation at **Chahar Boneh** commences with ashy layers containing bones, lithics and ceramics, interbedded with natural deposits, suggestive of seasonal, short-lived presence. Domesticated cereals and sheep/goat dominate the economic evidence at Chahar Boneh. These ashy layers are radiocarbon dated to *c.* 6000 BC, suggesting Neolithic occupation of the Qazvin plain some 400 years before that of the Tehran plain to the east. Approximately contemporary occupation has been encountered at Mai Tappeh on the southwest of the Qazvin plain (Sarlak 2016), while nearby Ajorband has ceramics dating to the mid-sixth millennium BC (Niakan 2016). Soundings at **Tepe Ebrahimabad** recovered scant architecture and a single human burial, with further evidence for cereals and legumes along with domesticated sheep/goat. The Neolithic at Ebrahimabad is dated to *c.* 5600–5200 BC.

At the western edges of the Qazvin plain towards Zanjan, the small site of **Tepe Khaleseh** is situated at 1,600 m above sea level near a tributary of the Abhar Rud (Valipour *et al.* 2012, 2013). Excavations here have uncovered mudbrick and *chineh* architecture, ovens and a pottery kiln of the Later Neolithic. Floors are plastered and occasionally paved with potsherds, and stone door sockets suggest use of wooden doors. Three infant burials were inserted beneath house floors (Figure 5.52) (Gręzak *et al.* 2010). Amongst the small finds, large quantities of clay tokens (mainly cones and spheres), bone tools, and a single clay stamp seal with schematic design are notable. The stamp seal (Valipour *et al.* 2013: Figures 11.39–11.40) is the earliest convincing example of a seal from all of Iran. Animal remains from Khaleseh are dominated, at 90%, by domesticated sheep/goat along with cattle and pig, with some hunting of gazelle and onager (Gręzak *et al.* 2010). Cultivated crops comprise above all barley and glume wheats with low numbers of pulses and large quantities of wild mustards probably gathered for use as fuel in firing of ceramics (Figure 5.53) (Whitlam *et al.* 2020). There are no radiocarbon dates but the pottery and other material point to a date of *c.* 6000–5600 BC, contemporary with Chahar Boneh 100 km to the southeast. Elsewhere in Zanjan and Gilan provinces, to the southwest of the Caspian Sea, scattered Later Neolithic occupation in the form of soft-ware pottery has been identified through survey (Alibaigi and Khosravi 2009; Alibaigi *et al.* 2012a), including the small sites of Arg-e Dasht B and C, perhaps seasonal campsites for Later Neolithic herders and hunters (Nokandeh 2005).

In sum, across the plains of central and northern Iran there is as yet no convincing sign of local precursors to the well-adapted Neolithic farmers and herders who spread into the region from *c.* 6000 BC, bringing their domesticated herds and grains with them. Where did they come from? The likeliest hypothesis for the time-being is that they moved into central and northern Iran from the west, steadily advancing across the Zagros ranges and foothills from areas where farming had already been practiced for up to 2000 years (Vahdati Nasab *et al.* 2019b). Why did they move? To what extent their movement was stimulated by climatic adversity attendant upon the 8.2 ka BP event

Figure 5.52 Tepe Khaleseh, views of site and infant burial in pot (photo credit: Hamid Reza Valipour).

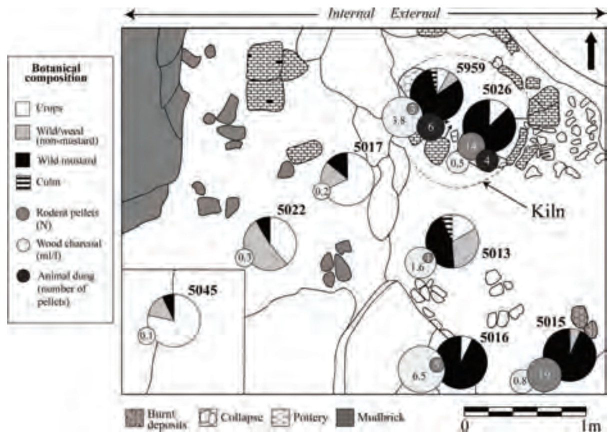

Figure 5.53 Tepe Khaleseh, plan of trench V, showing botanical composition of sample (Whitlam *et al.* 2020: Figure 8) (image courtesy of Jade Whitlam).

remains unclear (Schmidt *et al.* 2011), but there appears to be an at least approximate contemporaneity. A concerted, country-wide programme of radiocarbon dating and statistical analysis of samples from all relevant sites across Iran, in concert with renewed investigation of palaeoclimatic proxy records would yield some exciting results. Given the still sparse distribution of Neolithic sites across all regions of Iran, including even probable core zones such as the central Zagros, it appears unlikely that pressures of population density and associated resource exhaustion played a significant role in stimulating the spread of farming-herding communities across Iran and beyond. The expansion of the Neolithic across Iran can more usefully be viewed through the lens of human innovation and environmental opportunism articulated in Zeder's (2012, 2016) broad interpretive concept of human niche construction.

North-eastern Iran and Turkmenistan

The northeast of Iran is a critical region both in itself and as a transit zone for the spread of Neolithic lifeways across the Kopet Dagh and into Central Asia (Figure 5.54) (Harris and Gosden 1996; Coolidge 2005; Harris and Coolidge 2010; Roustaei 2014a, 2014b, 2016a, 2016b; Roustaei and Gratuze 2020; Taylor *et al.* 2021). We saw above that aceramic Neolithic occupation is well attested at Sang-e Chakhmaq West, probably introduced from outside (Vahdati Nasab *et al.* 2019b: 301). As yet no Neolithic sites predating *c.* 7000 BC have been located in north-eastern Iran and there is general agreement that the Neolithic of the region did not develop indigenously but was probably introduced from regions to the west such as the central Zagros (Roustaei and Gratuze 2020). A significant caveat, however, is the possibility that sites with Early Neolithic occupation have been completely buried under subsequent alluviation in geomorphologically dynamic environments such as the Gorgan plain (Roustaei 2016b: 45).

The west mound of Sang-e Chakhmaq was abandoned at *c.* 6700 BC and after a 400-year gap occupation restarted on the east mound, which is much larger at *c.* 400 m in diameter (Harris and Coolidge 2010: 63–64; Masuda *et al.* 2013; Thornton 2013a; Roustaei *et al.* 2015). Multi-room structures of cigar-shaped mudbrick and *chineh* occur through 6 m of deposits at **Sang-e Chakhmaq East**, with courtyards, fireplaces and kilns. Large quantities of wood charcoal were found, indicating a wooded local environment, possibly over-exploited by the inhabitants. The region is treeless today and has been for a very long time. Small finds include bone and antler implements, chert sickle blades and rare obsidian blades, stone axeheads (for chopping wood?), clay spindle whorls, clay and stone figurines (Furusato 2014) and large quantities of pottery, which shows connections both to the west (Sialk and Cheshmeh Ali) and to the east (Jeitun and Namazga I) (Tsuneki 2014a). Some 140 human burials, at least 75% of them infants, were also excavated with infants buried under house walls or under floors close to walls and rarely accompanied by grave goods or application of red ochre (Miyauchi 2014; Tagaya 2014). Adult body position changes from flexed at Sang-e Chakhmaq West to extended at Sang-e Chakhmaq East. Three females and one juvenile appear to have been buried at the same time. Radiocarbon dates from Sang-e Chakhmaq East indicate Neolithic occupation from *c.* 6300 BC to at least 5700 BC or possibly 5200 BC (Table 5.3) (Nakamura 2014) with levels of Transitional Chalcolithic on top. The faunal assemblage from Sang-e Chakhmaq East compares well to that from the earlier occupation at Sang-e Chakhmaq West, with hunting and herding of goat and sheep, hunting of gazelle, red deer, wild boar, onager and wetland birds and increased representation of cattle that appear to be domesticated by the time of settlement at Sang-e

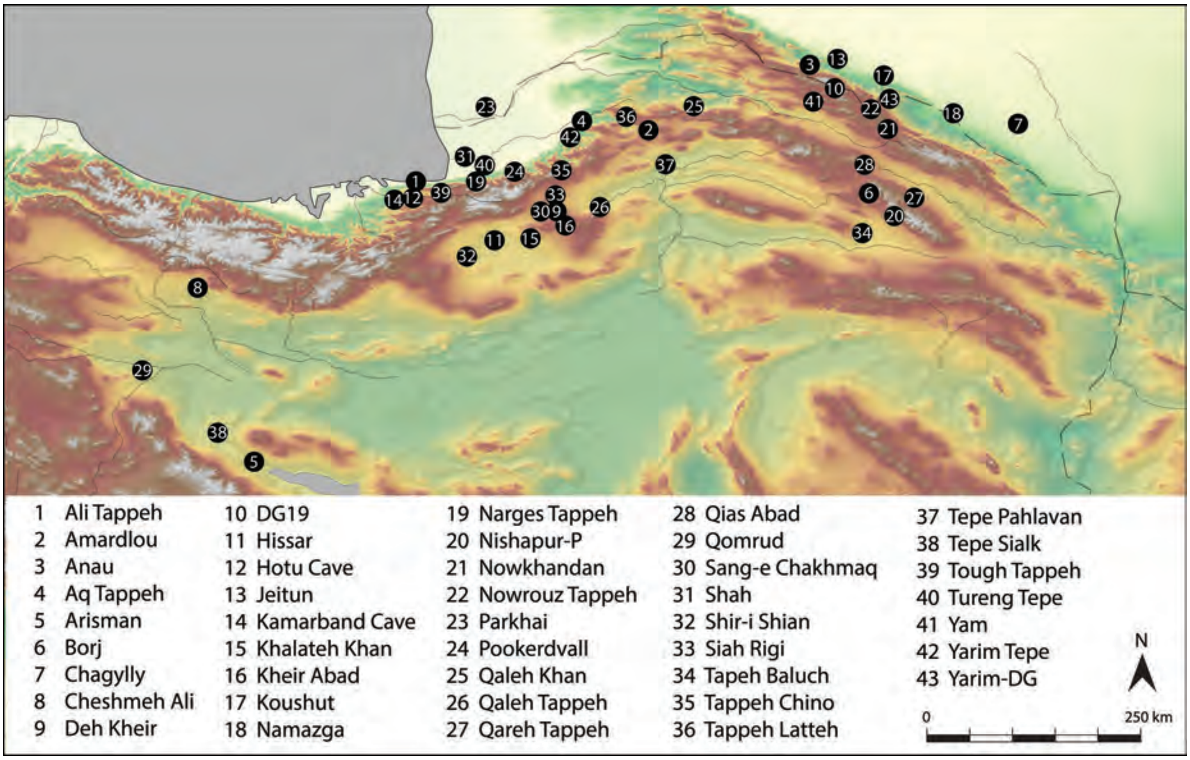

Figure 5.54 Neolithic and Chalcolithic sites of north-eastern Iran (after Thornton 2013a: Figure 15.1; Rezvani and Roustaei 2016; Roustaei 2016b: Figure 2).

Chakhmaq East (Mashkour *et al.* 2014; Roustaei *et al.* 2015). Charred plant remains show a reliance on barley for human consumption but with no evidence for local domestication, as well as a diverse range of wheats, an absence of cultivated pulses and a decline in proportions of wild plants (Fuller 2014; Tengberg 2014; Roustaei *et al.* 2015).

In addition to the ceramic parallels, there are many points of connection with sites of the Jeitun culture of the Neolithic of southern Turkmenistan 200 km to the northeast, including use of long cylindrical mudbricks, cosmetic vials, flat spindle whorls and hook-shaped bone sickles (Figure 5.55) (Masson and Harris 1994). Other artefacts, such as alabaster vessels, biconical spindle whorls and straight-handled bone sickles, compare well to material from Neolithic Sialk to the west (Figure 5.56) (Thornton 2013a: 244). This janiform attribute of Sang-e Chakhmaq East material culture strongly suggests that the occupants of the site were indeed agents of transmission of Neolithic lifeways from west to east across northern Iran and into Turkmenistan (and back again?). Petrographic analysis of pottery reveals their manufacture from purely local clays, even though stylistically the sampled vessels differ widely (Thornton 2013a: 254; Kurosawa 2014), which suggests that local potters had good awareness of a range of regional styles even if there was only limited movement of the vessels themselves.

Investigation at two other Neolithic sites in the Shahroud area augments the evidence from Sang-e Chakhmaq East: Deh Kheir and Khalateh Khan. Additionally, survey work has identified at least three further Neolithic sites in this region (Roustaei 2012a). The site of **Deh Kheir** lies just 2.5 km north of Sang-e Chakhmaq, adjacent to springs and seasonal streams on the southern flanks of the Alborz Mountains (Rezvani and Roustaei 2016). At Deh Kheir animal remains comprise both domesticated and hunted species, with goat, sheep and gazelle especially common (Mashkour *et al.* 2016). The high presence of gazelle bones at all three excavated Shahroud sites suggests deliberate location for exploitation of the animal resources of the desert fringe zone directly to the south. Also notable is the presence of a brown bear mandible, as also found at Sang-e Chakhmaq (Mashkour *et al.* 2014) and the scarcity of remains of cattle. Major architectural features at Deh Kheir include substantial kilns or ovens of *chineh* with multiple clay floors and structures of low parallel mudbrick walls with traces of burning, comparable to examples from the Jeitun culture of southern Turkmenistan although their purpose remains unclear. Handmade ceramics are comparable to those from Sang-e Chakhmaq East, in painted and plain styles. Painted motifs are exclusively geometric designs in the form of lines, lozenges and squares. Blades and bladelets dominate the chipped stone industry with some perforators and scrapers. Only two pieces of obsidian were found, as

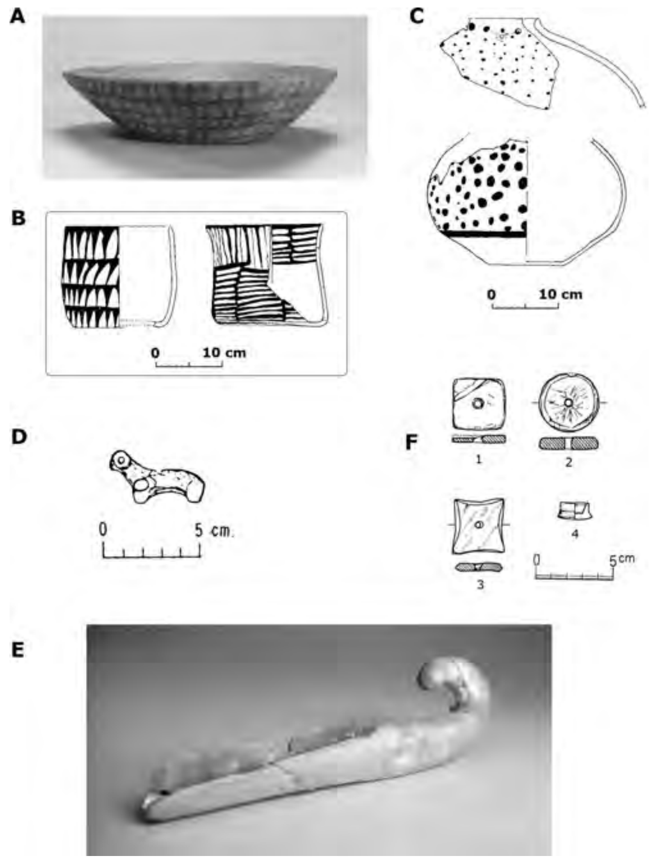

Figure 5.55 Sang-e Chakhmaq East, finds with Jeitun connections (Thornton 2013a: Figure 15.5).

yet unprovenanced. Amongst the small finds, two almost identical carved stone pieces depicting the head, torso and legs of an animal, perhaps a mouse, compare well to carved objects from Sang-e Chakhmaq East, while a marble animal pendant is exactly paralleled by examples from Jeitun sites in southern Turkmenistan (Rezvani and Roustaei 2016: 20). Two radiocarbon dates from Deh Kheir at *c.* 6050–5900 BC plus the ceramic evidence together indicate approximate contemporaneity of occupation with Sang-e Chakhmaq East, spanning much of the sixth millennium BC. Sherds of Cheshmeh Ali type occur across the surfaces of all three excavated sites in the Shahroud area but are not found in excavated contexts, suggesting either severe site deflation following abandonment or transitory occupation in the later sixth millennium BC (Rezvani and Roustaei 2016: 21).

To the south of Deh Kheir, **Khalateh Khan** is located on the ecotone between an alluvial fan and adjacent agricultural land not far from the desert fringes to the south, as at Deh Kheir (Roustaei 2016a). The site has been severely destroyed by removal of archaeological soils as fertilizer, a common problem here and in much of Iran and elsewhere. As at Deh Kheir and Sang-e Chakhmaq East, at Khalateh Khan there are substantial kilns or ovens of *chineh* with multiple clay floors and traces of mudbrick walls. Painted ceramics also compare well to those from Deh Kheir and Sang-e Chakhmaq East, mainly open bowls. Chipped stone tools include blades, perforators and scrapers with no evidence of obsidian. A few copper pins and beads are amongst the oldest known from the Central Plateau and north-eastern Iran. Eight radiocarbon dates show occupation covering at least 5600–5300 BC, towards the end of the Neolithic tradition of this region of Iran. In the archaeobotanical remains, a hulled tetraploid wheat is commonest as at Sang-e Chakhmaq East along with lesser representation of hulled and naked barley, while cultivated pulses such as lentils, peas and vetches as well as fruits such as pistachio and almond are notably absent at Khalateh Khan and other sites of the Shahroud region (Tengberg and David 2016: 103). Domesticated animals include goat, sheep and cattle with hunting of gazelle, wild boar, equids and hare (Mashkour *et al.* 2016). As at Deh Kheir and Sang-e Chakhmaq East there are no traces of domesticated pig in contrast to contemporary sites in the Zagros (Roustaei 2016a: 61).

Taken together, the three excavated Later Neolithic sites of the Shahroud region – Sang-e Chakhmaq East, Der Kheir and Khalateh Khan – show remarkable affinities in cultural attributes suggesting that strong social and economic bonds held these communities together while also connecting them to more distant communities such

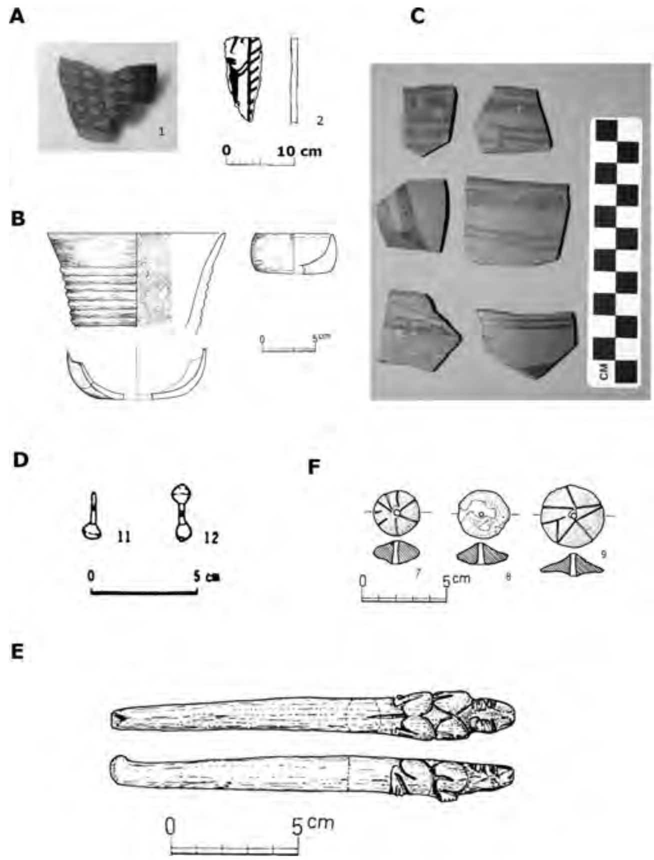

Figure 5.56 Sang-e Chakhmaq East, finds with Sialk connections (Thornton 2013a: Figure 15.6).

as those of the Jeitun tradition in southern Turkmenistan (Roustaei 2016a, 2016b). These commonalities include choice of settlement location at the distal end of alluvial fans with access to a broad range of biomes including arable land for tillage of hulled wheat, above all, with minimal engagement with pulses and fruits/nuts, pasturage for herding of goat and sheep, hilly and wooded terrain for hunting of wild boar and hare, and desert for hunting of gazelle and wild ass, as well as shared architectural traditions, even down to specific shapes and sizes of mudbricks. Affinities in ceramic styles, chipped stone tools and modest decorative items further emphasise the connectedness of these sedentary farming and hunting communities of north-eastern Iran. As to the geographic origins of these early farmers, the complete lack of evidence for local domestication processes of cereals at all excavated sites (Tengberg and David 2016: 104) strongly suggests an introduction from outside with the west of Iran the likeliest source. Moreover, the absence or rarity of pulses and pigs at Neolithic sites across northern and eastern Iran, from Tepe Khaleseh eastwards to Sang-e Chakhmaq East, suggests deliberate human selection of specific crops and animals to accompany them on their pioneering travels by means of which they introduced farming and herding to these regions of Iran and beyond.

Further information comes from the fertile and well-watered Gorgan plain at the south-eastern corner of the Caspian Sea, 50 km north of Sang-e Chakhmaq. Late Neolithic materials in this region have been found at Tureng Tepe (Deshayes 1969a), Aq Tepe (Malek Shahmirzadi and Nokandeh 2000) and Yarim Tepe (Crawford 1963). That other, and earlier, Neolithic sites might well exist in this region below recent alluvium is indicated by the fact that the Neolithic levels at Tureng Tepe lie below the modern water table (Deshayes 1969a; Kohl 1984: 46). Surveys of the Gorgan plain have detected multiple Later Neolithic sites with painted ceramics comparable to those of Aq Tepe, suggestive of a dense level of occupation of the plain through the sixth millennium BC (Roustaei 2016b; Roustaei and Nokandeh 2017; Roustaei and Gratuze 2020). On the edges of the Gorgan plain the site of **Pookerdvall** is situated by a tributary of the Qara Su (Yousefi Zoshk and Zeighami 2013; Abbāsi *et al.* 2016). Ceramics from the site suggest occupation in the mid-sixth millennium BC, with strong parallels with Sang-e Chakhmaq East and Jeitun. Briefly investigated Neolithic sites of the region include Tappeh Chino (Roustaei 2016a: 53). Ceramics of Jeitun type are found in the Atrek valley and the Darreh Gaz plain along the long border with Turkmenistan (Kohl and Heskel 1980; Kohl *et al.* 1982; Harris and Coolidge 2010: 64). The sites of **Pahlavan** and Challow on the Jajarm plain have also yielded Later Neolithic ceramics and chipped stone assemblages

(Vahdati 2010; Kharanaghi *et al.* 2016; Dana and Hozhabri 2019), as has **Qaleh Khan** on the Samalghan plain with radiocarbon dates of *c.* 5900–5700 BC, mudbrick architecture and circular kilns (Garazhian *et al.* 2014). Excavations at **Tapeh Baluch** on the Neyshabur plain west of Mashhad have recovered Neolithic pottery with painted motifs including rare representations of human figures (Sabori *et al.* 2017), as well as skulls and horns of possibly wild sheep and goat (Garazhian 2012), but precise dating of the site is unclear.

On the southern Caspian shores, ongoing use of the cave sites of Kamarband (Belt), Hotu and Komishan into the Later Neolithic is indicated by chaff-tempered soft-ware ceramics, sometimes decorated with red and brown paint, as well as sherds of Jeitun type (Dyson 1991; Voigt and Dyson 1992: 172; Gregg and Thornton 2012). Residue analysis of sherds from these caves indicates the use of pottery for cooking meat and processing dairy products from sheep and goat (Gregg 2009). Some way to the west very late Neolithic occupation is attested at Tepe Kelar and the small rock shelter of Rashak III (Vahdati Nasab *et al.* 2013c).

As to the dispersal of Neolithic lifeways eastwards from Iran into Turkmenistan and beyond, the many material culture connections between the Neolithic sites of north-eastern Iran and those of southern Turkmenistan across the Kopet Dagh, such as Monjukli Depe, are highly suggestive (Pollock and Bernbeck 2011; Bernbeck and Pollock 2016). The first point to make is that, yet again, the appearance of the earliest Jeitun culture sites in Turkmenistan appears to coincide with the 8.2 ka BP event (Harris 2010: 233; see also Düring 2011: 124–125 for possible impact of the 8.2 ka BP event on agricultural expansion across Turkey). The presence of domesticated sheep by 6000 BC at Obishir V in southern Kyrgyzstan suggests a relatively rapid spread of Neolithic herding practices eastwards from southern Turkmenistan across challenging terrain (Taylor *et al.* 2021). Secondly, there is no evidence for local development of the Neolithic in Turkmenistan or beyond. David Harris summarises the Neolithic of southern Turkmenistan thus:

> The general uniformity of the material culture of the Jeitun-Culture settlements, especially their mudbrick architecture and chaff-tempered pottery, supports the inference that they were initially founded as sedentary settlements by migrants seeking new land to occupy with their crops and livestock.
>
> (Harris 2010: 233)

Finally, Harris concludes that the dispersal of Neolithic settlers, with their herds and plants, towards Turkmenistan took place across the northern reaches of Iran, an "inviting corridor" (Harris 2010: 235) leading from the Zagros to the Kopet Dagh. Naomi Miller (2003: 14; Stevens *et al.* 2016) points out that the spread of einkorn, the major crop plant at Jeitun, is unlikely to have happened along the Caspian Sea coast as the hot humid conditions there would be inimical to its growth. The west-east spread is therefore likelier to have been along the northern edge of the Iranian plateau south of the Alborz range. It is however striking that einkorn is conspicuously absent from the archaeobotanical record at excavated sites in the Shahroud region, including Sang-e Chakhmaq East, Deh Kheir and Khalateh Khan (Tengberg and David 2016).

Iran domesticated: the culmination of the Neolithic

By 5200 BC the majority of Iran's human population, which in total is unlikely to have numbered more than a few tens of thousands, were farmers and herders living in rather small mudbrick villages, perhaps an average of 100–200 people per settlement. Their villages tended to cluster in areas favourable to a mixed economy of farming, herding and hunting always with good access to fresh water in the form of springs or rivers (Mortensen 1972; Hole 1987a: 83). They spread across Iran in a slow but steady manner, absorbing local hunter–gatherer populations where they existed. Analysis of dated Neolithic sites across Iran and regions to the east has indicated an average speed of dispersal of farming lifeways of 0.65 km per year. Farming spread along the two major east-west routes of Iran: the Great Khorasan Road skirting the northern edge of the Dasht-e Kavir into Turkmenistan and Central Asia, and the Royal Road through Fars and Kerman to Baluchistan and beyond into South and Southeast Asia (Gangal *et al.* 2014; Lister *et al.* 2018; Mutin *et al.* 2020), mirroring the great Palaeolithic diaspora pathways of much earlier millennia (Chapter 4: Vahdati Nasab *et al.* 2013a; Dennell 2020) as well as the Silk Roads of more recent times (Frankopan 2015). This rate of spread is slightly slower than that of the Neolithic from Southwest Asia into Europe, perhaps because of the lack of major inland waterways connecting the west of Iran to the east.

Neolithic farmers of Iran sowed their seeds and grains in prepared fields, and they tended their flocks of goat and sheep, leading them on movements to pastures high and low according to season. They stored their foodstuffs in pots and clay bins within their houses. They began to experiment with the cultivation of a diverse range of foods including fruit- and nut-bearing trees, building on millennia of collecting and consuming wild species such as fig, grape, pistachio, almond, acorn, hackberry and pear (Tengberg 2012b; Willcox 2016). They felt a strong attachment to place, building their houses directly on top of earlier houses to create artificial mounds that dotted the landscape. They liked to hunt, heading into the marshes, mountains and desert fringes to chase boar, gazelle, aurochs and deer, and they enjoyed extensive knowledge of how to use the wide range of plants around them.

They made their own pottery and were increasingly adept at a range of craft activities including the production of textiles, basketry, and tools of chert, stone, bone, antler and wood. Developments in chipped stone tool manufacturing technology, including widespread adoption of the pressure-flaking technique to produce standardised forms of tools such as blades and bladelets, are products of an ever-increasing "permanency of the working sequence" associated with routinised settled Neolithic behaviour (Thomalsky 2016: 176).

We have little insight into gendered aspects of the Neolithic of Iran. What did men and women differentially do, if anything at all (apart from the obvious roles prescribed by biology)? At present we cannot answer that question definitively, but we can draw on evidence and discussion from elsewhere in order to consider it. Diane Bolger's (2010) analysis of gender in early agricultural societies of Southwest Asia highlights the assumptions made by archaeologists in constructing polarised narratives for prehistoric societies, assigning roles such as hunting, shepherding and ploughing to men, and gathering, grinding and ceramic manufacture to women. One of the first studies of the gender issue to draw directly on physical evidence from the Neolithic was Theya Molleson's (2000) analysis of Epipalaeolithic and Neolithic human skeletons from Abu Hureyra in northern Syria, in which she detected indications of stress and strains to joints, mainly on adult females, suggestive of long hours spent grinding grain in a kneeling position, leading Molleson to propose that "Women were tied to the house for several hours every day, while the men would have worked in the field and, in the appropriate season, trapped and processed game" (2000: 324). More extensive work by Jane Peterson (2002, 2006) on Neolithic Levant skeletons, however, could not identify any significant differences in stress and strain indicators to support male vs. female task differentiation in the Neolithic. A related issue is the extent to which Neolithic modes and methods of food storage, preparation, cooking and consumption may have generated new potential for gendered roles in early sedentary societies (K. Wright 2000). As yet the human burial evidence from Neolithic Iran does not enable us to discern significant gender- or age-based variation in treatment of the dead but there is scope for more detailed contextual studies to be conducted (Croucher 2012).

Neolithic Iranians began to experiment with cold-working of copper ores (Pigott 1999: 74) and with transforming materials through fire. They invested significant amounts of time and ingenuity in decorating their pottery with paint and they showed acute awareness of correct "styles" in doing so. They made figurines of animals and people out of clay and stone, and they also made use of small clay tokens in the form of cones and spheres for purposes that are not clear to us but perhaps for counting, storing and redistributing commodities, in games and perhaps also for ritual purposes as "token" offerings seeking divine support (Schmandt-Besserat 2018; Bennison-Chapman 2019; Palka 2021). They were involved in long-distance networks of material movement, involving obsidian from Lake Van sources, for example, but individual communities may not have been aware of the considerable distances to raw material sources, as movement may have been down-the-line from village to village rather than direct to source for each village (G. Wright 1969). Unlike their Palaeolithic forbears, they had the potential to accumulate, inherit and pass on to their offspring significant wealth in the form of agricultural surplus, farmed land, animal stock, buildings and material possessions, thereby stimulating a trend towards ever-increasing social inequality (Bogaard *et al.* 2018, 2019), but there is little sign that they chose to do so. An intriguing cross-cultural study has identified intergenerational wealth transfer as "modest in hunter–gatherer and horticultural systems and substantial in agricultural and pastoral systems" (Borgerhoff Mulder *et al.* 2009: 686), an interpretation that encourages us to stress the highly mixed nature of food procurement strategies of the small-scale Neolithic communities of Iran, with hunting, gathering and horticulture or "garden agriculture" (Bogaard 2005) at least as important as intensive crop cultivation and stock-rearing.

They liked to keep their dead close by, burying them a few tens of centimetres beneath their house floors, dabbing them with red ochre, covering them over and carrying on with daily life directly above them. Many of their children died young, doubtless as a result of the increased risks from "spillover" zoonotic diseases such as brucellosis attendant upon the settled farmer–herder lifestyle (Quammen 2012; Moreno 2014). Indeed, it has been argued that the pressure of new diseases was a major stimulus in the agricultural transition, obliging newly settled communities to increase their birth rates, and to intensify their food production accordingly, just to stay ahead of the terrible impacts of infectious diseases flourishing under conditions of year-round human sedentism (Groube 1996; Bocquet-Appel 2011). The effect of the newly virulent diseases on local hunter–gatherer communities, as they encountered incoming farmer–herders, may have been devastating (as we barely need to stress in the circumstances of the COVID-19 pandemic within which the writing of this book has been completed).

With rare possible exceptions, they do not appear to have constructed special buildings in which to worship their gods. They appear to have treated each other as equals in both life and death. It was a simple life, one very different from the hunter–gatherer ways that had persisted for thousands of years before, but what they had in common with their hunter ancestors was an intimate familiarity with the physical worlds around them – the worlds of plants, animals, sun, water, wind, rain and the spirits of nature. Their life, like that of the hunter–gatherers, was utterly shaped by the rhythms of day and night, and of winter and summer. But without knowing it, step by step over several millennia they were establishing the agricultural and social foundations upon which the achievements of all future generations of Iran would be constructed.

6 Early social complexity in Iran: the Chalcolithic period, 5200–3200 BC

The domestication of human society: Chalcolithic communities of Iran

We explored in the previous chapter how the Neolithic period in Iran was a time of significant change in human relationships with the natural world, a reformulation and intensification of human engagement with plants, animals and the broader environment, creating the farming and herding basis of subsequent societies in the region. Against this background, the following Chalcolithic period can be characterised as a time when human relationships with other humans underwent fundamental realignments, built upon and enabled by the agricultural foundations established through the Neolithic. Above all, these changes involved basic reorientations of social relations amongst and between human communities, culminating in the emergence of complex, hierarchical, state-like societies by the last centuries of the Chalcolithic, at least in parts of Iran. If people during the Neolithic constructed the enduring rural and pastoral platform for subsequent Iranian societies then people during the Chalcolithic created the socio-political structures that adorned that platform for millennia to come and to some extent still do even today. While humans succeeded in domesticating certain plants and animals during the Neolithic, it was the achievement of humans to domesticate themselves through the centuries of the Chalcolithic.

Key components of the Chalcolithic in Iran include significant technological developments in a range of fields, metallurgy above all, (as indicated by the term "Chalcolithic" = "Copper-Stone Age"; Benoit 2004: 184–190; Weeks 2004, 2012, 2013b; Helwing and Nokandeh 2017), including the intensification of agricultural production through new technologies such as irrigation (Bagg 2012; Vidale 2018b), the establishment of craft specialisation, the development of long-distance trade and exchange, increasingly complex ritual activities, and new social hierarchies attested in multiple forms of evidence including settlement patterns, architecture, material culture, iconography and mortuary practices. Following their successful domestication of the founder crops and animals of the Neolithic, human communities during the Chalcolithic and beyond succeeded in bringing into cultivation an increased range of resources that came to have major significance for the diet and economy of the region (Tengberg 2012b), both as fresh and preserved elements of diet and also in the form of secondary products such as wine and oils that could be locally consumed or exchanged as valuable commodities in ever-intensifying and expanding networks of trade across Iran and beyond.

In terms of palaeoclimate, the sixth-fourth millennia BC was a propitious time for human settlement in Iran, the so-called climatic optimum, with indication of increased levels of rainfall across Iran, while the end of the Chalcolithic coincides with an episode of relative aridity (Kehl 2009; Hole 2011; Schmidt *et al.* 2011; Jones 2013: 25; Jones *et al.* 2013; Sharifi *et al.* 2015). In this chapter we examine the evidence for these issues from relevant regions and sites of Iran in a broadly chronological manner, focusing in turn on north-western Iran, north-central Iran, western Iran, south-western Iran, southern Iran and south-eastern Iran. In so doing we follow specific themes and issues appropriate to particular sites and bodies of evidence. The chrono-spatial co-ordinates of major Chalcolithic regions and sites are depicted in Figure 6.1.

Our knowledge of the Chalcolithic period in Iran comes from a range of sites, with excavation often focused on major multi-period mounds such as Tepe Sialk (Ghirshman 1939), Tepe Hissar (Schmidt 1937; Roustaei 2010a; Gürsan-Salzmann 2016), Cheshmeh Ali (Schmidt 1935, 1936; Matney 1995), Chogha Mish (Delougaz *et al.* 1996; Alizadeh 2008), Susa (Harper *et al.* 1992), Godin Tepe (Gopnik and Rothman 2011), Tepe Yahya (Lamberg-Karlovsky and Beale 1986) and Tal-e Iblis (Caldwell 1967) to cite a few of the most important (see Peasnall 2002b; Helwing 2005 for good overviews of most of these sites). Alongside these excavations, some of which took place at a time when field excavation and recording techniques had yet to meet modern standards, there is a range of information from new excavations and surveys of extensive territories of Iran, including much of Khuzestan, parts of the Zagros, the Qazvin and Tehran plains and regions across northern and eastern Iran, largely conducted by Iranian archaeologists as referred to throughout this chapter. What has not been attempted, here or elsewhere,

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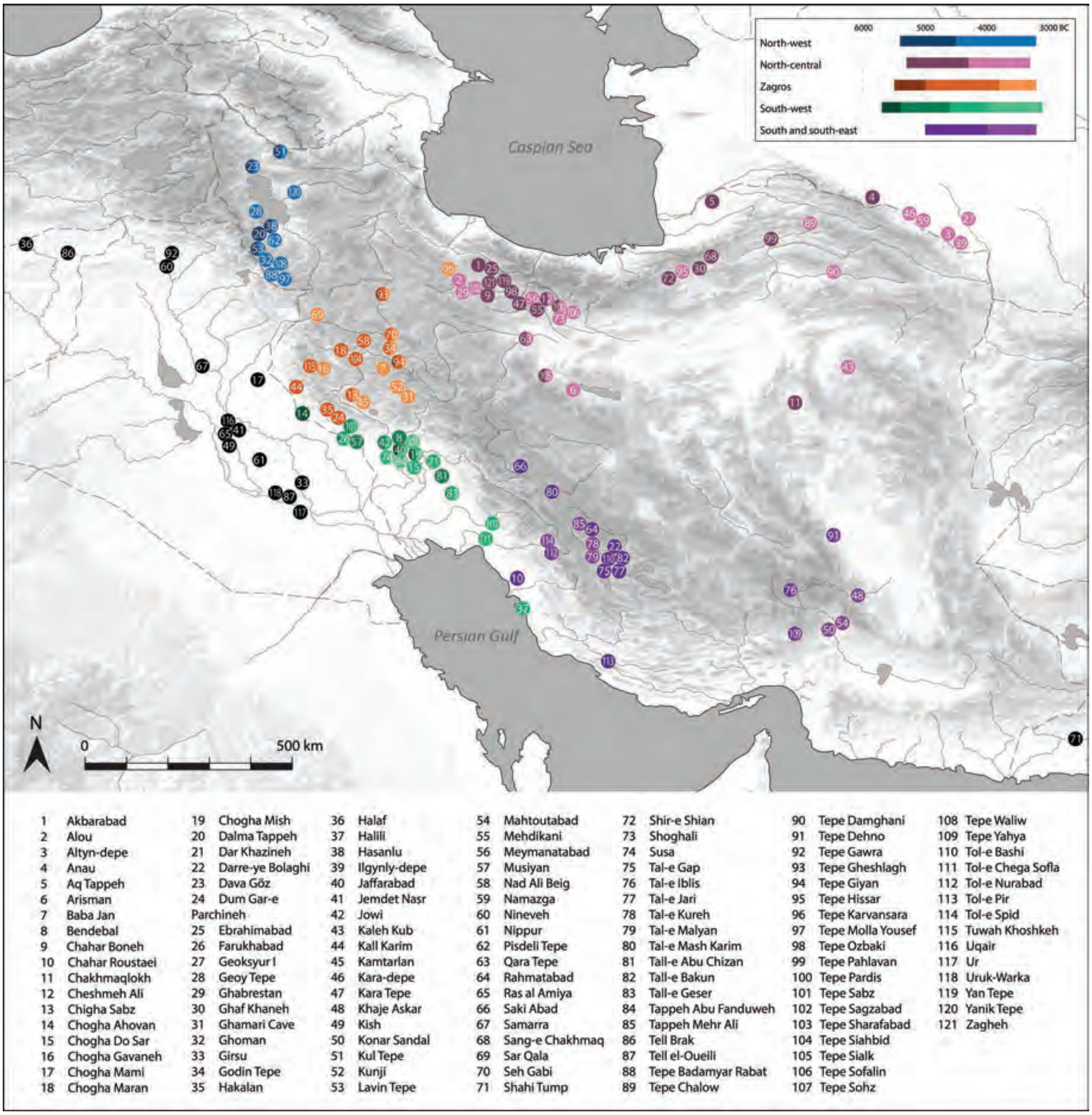

Figure 6.1 Map of Chalcolithic Iran.

is a synthesis of the vast amount of data generated by multiple surveys across Iran, in particular over the past 20 years by archaeology departments in Iranian universities and by national and local offices of the Iranian Centre for Archaeological Research. Most of these surveys have been reported on only in internal archive reports in Persian, and a major project for the future would involve systematic collation and analysis of this extremely rich dataset.

First steps: Chalcolithic societies of northern and central Iran

We studied in the last chapter the processes by which the plains and hills of north-central and north-western Iran were first settled from 6500–6000 BC, as the evidence currently indicates, while to the northeast the west mound of Sang-e Chakhmaq reveals occupation there from *c.* 7000 BC. Systematic programmes of survey with associated test excavations and radiocarbon dating have established a sound chronology for north-central Iran (Fazeli *et al.* 2004, 2005; Fazeli Nashli *et al.* 2009, 2013b: Table 7.1; Pollard *et al.* 2013) as set out in Table 6.1.

This chronology has limited portability beyond the plains of the north-central region where our knowledge is generally less well-developed (Helwing 2013b). In north-western Iran the Hasanlu sequence is still critical

Table 6.1 Chronology chart

(Voigt 1987; Voigt and Dyson 1992), in particular the Dalma phase (Hasanlu IX: 5350–4700 BC) and the Pisdeli phase (Hasanlu VIII: 4700–3950 BC). To the northeast, the sites of Tepe Hissar, Sang-e Chakhmaq East, Aq Tappeh and Shir-e Shian provide important information, but precise chronological relationships are difficult to establish given the shortage of reliable radiocarbon dates (Dyson 1991; Dyson and Thornton 2009; Gürsan-Salzmann 2016).

The transition from the Late Neolithic to the Early Chalcolithic in north-western Iran, 5400–4500 BC

Our understanding of the Neolithic-Chalcolithic transition in north-western Iran has been significantly enhanced by ongoing fieldwork in the region. The excavated sites of **Dava Göz** and **Kul Tepe** (note – there are many sites with this name, which means "Ash Mound") as well as new settlement surveys across north-western Iran have provided useful information not only with regard to the broader chronology of the region but also to address the almost 1,000-year hiatus in settlement evidence between levels VIII and VII at Hasanlu in the Late Chalcolithic (Table 6.2) (Nobari *et al.* 2012a; Abedi *et al.* 2014b, 2015, 2018b, 2018c, 2019; Abedi 2016b, 2017). The apparent hiatus between the Late Neolithic of Hajji Firuz and the Early Chalcolithic of Dalma has been largely bridged by excavations at Dava Göz, with a short interval after the start of the Transitional Chalcolithic at 5400 BC. Neolithic Hajji Firuz ceramic assemblages were succeeded by red to brown ceramics with three major categories of surface treatment: painted, red-slipped and plain wares. Obsidian for lithic tools at Dava Göz in the Transitional Chalcolithic comes from a range of Caucasian sources to the north, with Syunik in Armenia one option, although recently investigated obsidian outcrops in the Sarab district of Eastern Azerbaijan province are also a possible source, now established as being exploited by Chalcolithic and Early Bronze Age communities of the region (Orange *et al.* 2021a, 2021b).

Dalma-type ceramic assemblages appear first in north-western Iran at *c.* 5000 BC. At **Dalma Tappeh** itself, excavations by Burney and Young exposed architecture of *chineh* with occasional plaster. Rare examples of Chalcolithic burials, 14 in total, were also excavated, all of them single infant burials within ceramic vessels in probable courtyard contexts (Hamlin 1975: 115). No adult burials were encountered. Spindle whorls indicate basic textile production at least. The ceramics at Dalma Tappeh show a development from painted decoration to impressed surface adornment of various kinds. The painted motifs are distinctive, basic geometric shapes in rather bold designs (Figure 6.2) (Hamlin 1975: Figures 4–7).

Petrographic studies of the Dalma Ware indicate that each site produced their own ceramics, with no evidence for regional movement or exchange of finished vessels (Henrickson and Vitali 1987; Henrickson 1991; Tonoike 2012). Most of the lithics at Dalma sites such as Dalma itself, Ghosha in the Ardebil region and sites north of Lake Urmia are of obsidian from the Syunik source in Armenia with lesser amounts from Lake Van sources (Nadooshan *et al.* 2013; Abedi 2017; Abedi *et al.* 2018a; Barge *et al.* 2018).

Settlement survey along the Lesser Zab river, rising in the mountains of Piranshahr, as well as excavations at **Lavin Tepe**, have provided information about settlement types of the Dalma period (Binandeh *et al.* 2012; Nobari *et al.* 2012a), which can be divided into two kinds: permanent settlements in fertile intermontane valleys and temporary seasonal camps of probable transhumance in the highlands of the Zagros, the Caucasus and other uplands of north-western Iran. A village-based form of seasonal migration (transhumant pastoralism) is the most likely scenario whereby small groups of people moved with their flocks between settlements according to availability of pasture (Tonoike 2012; Abedi *et al.* 2015; Abedi 2017). Stratified peat deposits from Lake Neor

Table 6.2 Chronology of occupation at Kul Tepe (after Abedi *et al.* 2014b: fig. 6)

Kul Tepe phase	*Period*	*Approximate dates cal BC*
Kul Tepe I	Achaemenid	6th–4th centuries BC
Kul Tepe II	Iron III (Urartian)	8th–6th centuries BC
Kul Tepe III	Middle Bronze Age (Urmia Ware)	2000–1500
Kul Tepe IV	Kura Araxes II-III (Early Bronze Age)	3200/3100–23000/2200
Kul Tepe V	Kura Araxes I	3700/3600–3200/3100
Kul Tepe VIA	Late Chalcolithic 3 (Chaff tempered)	4000/3900-3700/3600
Kul Tepe VIB	Late Chalcolithic 2 (Chaff-faced/tempered)	4300/4200–4000/3900
Kul Tepe VII	Late Chalcolithic 1 (Pisdeli/Hasanlu VIII)	4500/4400–4300/4200
Kul Tepe VIII	Early Chalcolithic (Dalma)	5000–4500/4400

Figure 6.2 Dalma Tappeh, Dalma ceramics (photo credit: University Museum, University of Pennsylvania).

in north-western Iran with high frequencies of coprophagous and coprophilous beetle remains, taken alongside pollen evidence, together suggest an open steppe landscape in this region of Iran through much of its prehistory, with the practice of village-based pastoralism in the surrounding high plains since at least 4500 BC (Ponel *et al.* 2013). Survey in the Lesser Zab basin indicates that Dalma sites range from 1 to 3 ha in area and are located at 1,200–1,500 m above sea level. No cultic structures or monumental buildings have been found at the Dalma sites, and houses include freestanding domestic structures.

The developed Chalcolithic of north-western Iran, 4500–3200 BC

The successor to Dalma Ware was first identified at **Pisdeli Tepe** in the same region of the Solduz valley (Dyson and Young 1960; Hole 1987b: 46), different from Dalma Ware but also sharing a resemblance to Mesopotamian Late Ubaid ceramics (Voigt 1987: 621), with connections to levels XII-XIIA at Tepe Gawra in Iraq. Pisdeli or Ubaid-related levels were also reached at the base of the multi-period site of **Geoy Tepe**, where there appear to have been large, multi-roomed houses with storage vessels and stamp seal impressions (Burton-Brown 1950). At some time around 4000 BC it appears that many, perhaps all, of the small Chalcolithic settlements in the Ushnu-Solduz region were abandoned, perhaps indicating a transition from arable farming to pastoral mobility (Danti *et al.* 2004: 595). Obsidian from Pisdeli-period sites in the Urmia basin continues to arrive from Lake Van (Meydan) and Armenian sources (Barge *et al.* 2018).

According to Abedi (2016b, 2017; Abedi *et al.* 2018b, 2018c, 2019) the Late Chalcolithic of north-western Iran is the continuation of the Dalma culture without any interruption (Table 6.2). Abedi divides the Late Chalcolithic period into the three sub-phases of Kul Tepe VII (= Pisdeli = Late Chalcolithic 1 = post-Ubaid), Kul Tepe VIB (= Late Chalcolithic 2 = Chaff-faced/Chaff-tempered) and Kul Tepe VIA (= Late Chalcolithic 3 = Chaff-tempered). Late Chalcolithic 1 spans 4500–4200 BC, supported by radiocarbon dates. Houses of **Kul Tepe** (Figure 6.3) in the Pisdeli period were made both of rectangular mudbrick and of stone. Pisdeli ceramics are decorated with combed, grooved, excised, incised, impressed and geometric adornment applied on the exterior surface of vessels with brown and black paint on a buff slip (Figure 6.4). Pisdeli Buff Ware's similarities to Ubaid 4 and Tepe Gawra

Figure 6.3 Kul Tepe, view of mound from the north (Abedi *et al.* 2014b: Figure 1) (photo credit: Akbar Abedi).

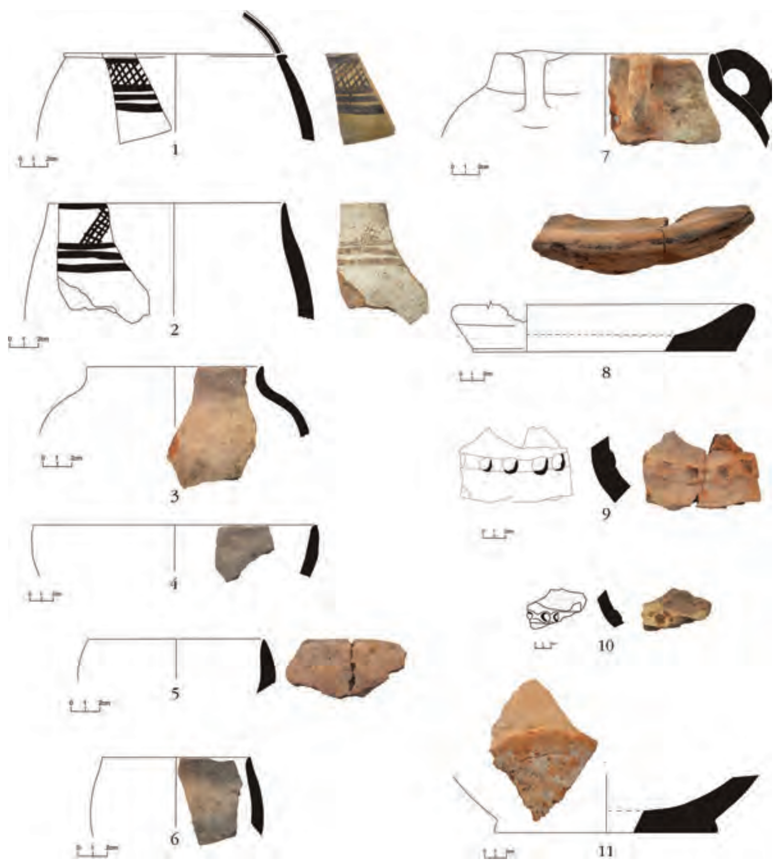

Figure 6.4 Kul Tepe VII pottery of Late Chalcolithic 1 (Pisdeli) (Abedi *et al.* 2014b: Figure 12) (image courtesy of Akbar Abedi).

ceramics indicate cultural interactions with Mesopotamia to the west. Most of the lithic tools, >95%, are of obsidian using both flake and blade technologies, with major use of sources close to Lake Urmia (Niknami *et al.* 2010). Frequent ground-stone tools such as pestles and mortars suggest significant agricultural activities at Kul Tepe.

Late Chalcolithic 2 ceramics are characterised as Chaff-faced Ware, spanning *c.* 4200–3900 BC, while Late Chalcolithic 3 Chaff-faced Ware continues until *c.* 3700 BC (Figure 6.5). Chaff-faced Ware was a new tradition whereby potters used generous amounts of organic inclusions, or chaff temper, suggestive of technological standardisation and simplification, as first identified in Braidwood's work on the Amuq plain in the 1930s. The ceramics of the first two phases of the Late Chalcolithic in north-western Iran are handmade and the surfaces of ceramics

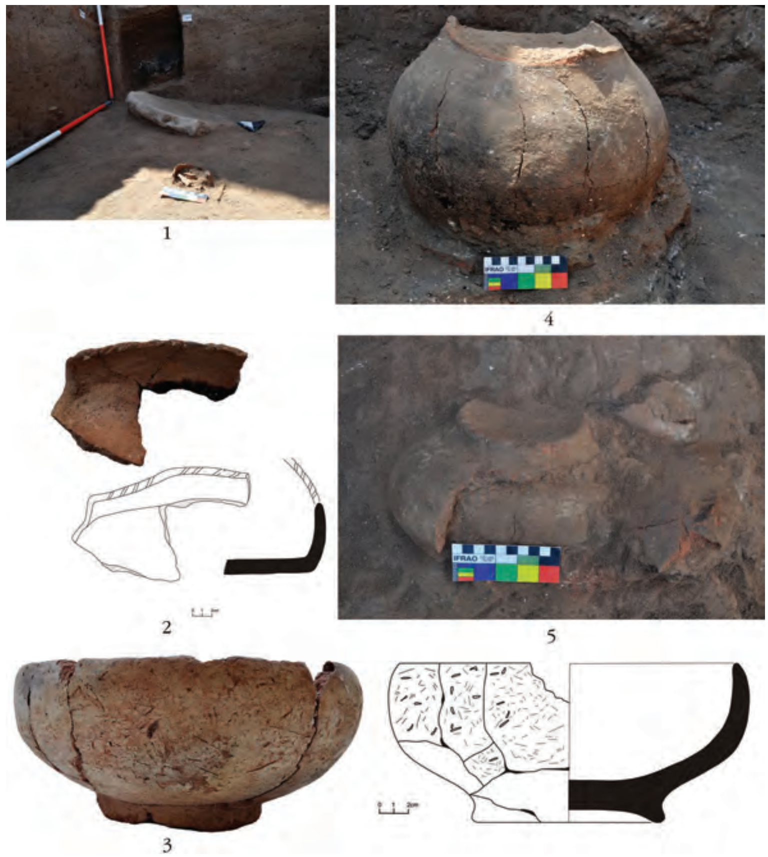

Figure 6.5 Kul Tepe VIA pottery of Late Chalcolithic 3 (Chaff-faced) (Abedi *et al.* 2014b: Figure 30) (photo credit: Akbar Abedi).

were burnished or smoothed, a treatment that at times obliterates the chaff impressions (Sagona 2018: 158). Chaff-faced Wares of north-western Iran, mainly in the form of jars, can be classified as either plain or decorated in a range of styles. Whether the widespread occurrence of Chaff-faced Ware represents migration and spread of the style from a core region such as Upper Mesopotamia, or more or less parallel development of ceramic technology to meet regionally specific socio-cultural demands, remains an open question (Marro 2010, 2012). In north-western Iran the emergence of Chaff-faced Ware starts at *c.* 4200 BC based on the cultural sequences of **Dava Göz** and Kul Tepe. Obsidian continues as the main material for lithics including scrapers, burins, points and sickle blades, with an increasing focus on the Syunik source in Armenia (Nadooshan *et al.* 2013; Abedi *et al.* 2018b, 2018c).

From the Hasanlu project there is a gap between level VIIIA (= Pisdeli period) and VIIC (= Kura Araxes II – see Chapter 8). As Danti and Voigt suggested, the Solduz valley was a corridor or social boundary and prone to intrusion from Upper Mesopotamia on the one hand and Caucasia on the other (Voigt 1989; Danti *et al.* 2004: 584). New survey to the south of Lake Urmia in the Lesser Zab river basin has recovered evidence of Uruk ceramics. Bevelled-rim bowls were found at Tepe Badamyar Rabat, Tepe Waliw, Badamyar, Tepe Molla Yousef, Lavin and Ghoman. These new finds reveal that people continued to live in the region through the Late Chalcolithic period 3700–3200 BC and to maintain significant transregional connections, in particular with neighbours to the west (Nobari *et al.* 2012b; Abedi *et al.* 2019). Across the Iraqi border on the Rania plain, Late Chalcolithic ceramics from surveyed sites attest a degree of connectivity with contemporary north-west Iranian assemblages at sites such as Pisdeli, Yanik Tepe and Geoy Tepe (Baldi 2018).

The Transitional Chalcolithic of north-central Iran, 5300–4300 BC

For north-central Iran the term "Transitional Chalcolithic" has been given to a long timespan, approximately a millennium, bridging the Neolithic to the Chalcolithic (Fazeli Nashli *et al.* 2009; Vidale *et al.* 2018). From the end of the sixth millennium BC, we can trace the development of essentially Late Neolithic communities to the more complex societies of the full Chalcolithic (Fazeli Nashli and Abbasnegad Seresty 2005). Indicators of this transition include: intensified herding of cattle, sheep and goat (Mashkour *et al.* 1999; Mashkour 2002; Fazeli Nashli *et al.* 2009); the cultivation of barley and bread wheat employing irrigation systems (Gillmore *et al.* 2009); the development of long-distance exchange and trade; increasingly complex ritual activities including social differentiation in mortuary practices; the use of specialised craft areas for increasingly standardised craft production, including early metallurgy; and the use of innovative production techniques such as mineral-tempered and wheel-thrown pottery (Dyson 1991; Fazeli *et al.* 2007; Fazeli Nashli *et al.* 2010; Vidale *et al.* 2018). Together these attributes support an interpretation of early complex societies evolving on the plains of north-central Iran by the end of the Transitional Chalcolithic. Whether these features can be associated with social hierarchy, however, is still a matter of debate: the evidence might rather be interpreted as connected to issues of gender, cultic practice or craft specialisation, for example, without imputing social hierarchy, an issue to which we return below.

Settlement patterns and food procurement strategies

Looking at numbers of sites located in surveys, there is a notable increase in settlement densities on the Tehran and Qazvin plains during the Transitional Chalcolithic period (Figure 6.6). Most of the sites are below 5 ha in area. The important site of **Zagheh** on the Qazvin plain covers 3.5 ha (Malek Shahmirzadi 1977; Fazeli 2004; Fazeli *et al.* 2005; Fazeli Nashli *et al.* 2011), while Akbarabad covers more than 3 ha and is 17–20 m high. **Tappeh Ozbaki** in the region of Savajbolagh, west of Tehran, appears to have been larger in the Transitional Chalcolithic (Majidzadeh 2001). These sites compare well with the size of the Transitional and Early Chalcolithic site of Sialk, which Ghirshman (1939: 166) reported as *c.* 3.5 ha. The Transitional Chalcolithic settlements of the Tehran plain consist of **Cheshmeh Ali**, Mehdikani and others. Most sites have multiple periods of settlement (Fazeli 2001). At **Tepe Sialk** on the Kashan plain, occupation restarted at Sialk South in the late fifth millennium BC, after a hiatus of up to 800 years (Fazeli Nashli *et al.* 2013a; Kourampas *et al.* 2013; Fazeli Nashli and Nokandeh 2019). There appears to have been a major episode of settlement interruption during the fifth millennium BC across the Kashan, Qazvin and Tehran plains, perhaps associated with a period of alluvial sedimentation (Fazeli *et al.* 2005; Fazeli Nashli *et al.* 2009; Pollard *et al.* 2013; Maghsoudi *et al.* 2014).

Societies in the Transitional Chalcolithic period in Iran employed mixed subsistence strategies of farming and animal husbandry, with some exploitation of wild resources (Figure 6.7) (Mashkour *et al.* 1999; Mashkour 2002; Fazeli Nashli *et al.* 2009; Mashkour and Bon 2019). Domesticated ovicaprids (goat and sheep) are the dominant species at all sites in the Transitional Chalcolithic period (Young and Fazeli 2008). Wild ovicaprids and then cattle are the next most significant types. At **Chahar Boneh**, **Ebrahimabad** and Zagheh domesticated sheep/goat are most common but there is also evidence for hunting of wild goat and equid at Chahar Boneh, of wild equid at Ebrahimabad and of wild sheep and gazelle at Zagheh, good indications of variability in animal exploitation strategies according to regional availability and perhaps also to local traditions. These sites span the transition from the latest Neolithic into the earliest Transitional Chalcolithic (Fazeli Nashli *et al.* 2009, 2013b). A shift in animal exploitation strategies from the Late Neolithic to the Transitional Chalcolithic has also been discerned at **Sang-e Chakhmaq East** in north-eastern Iran, where tools made of antler and deer bone are replaced by tools made of cow bones (Thornton 2013a: 244).

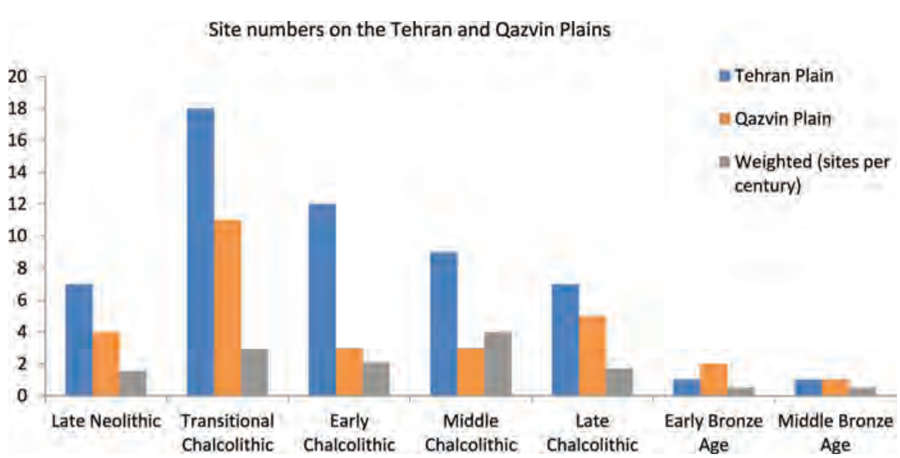

Figure 6.6 Settlement through time on the Tehran and Qazvin plains.

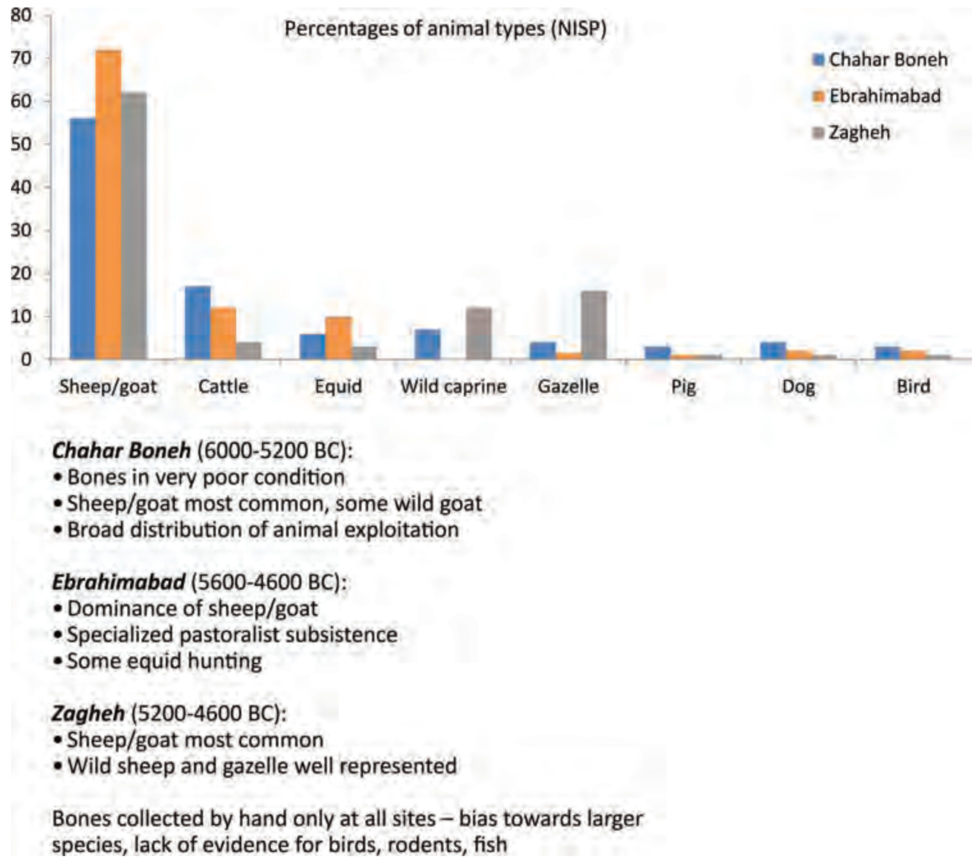

Figure 6.7 Transitional Chalcolithic subsistence strategies on the Qazvin plain: the evidence of faunal remains (data from Mashkour *et al.* 1999; Young and Fazeli 2008).

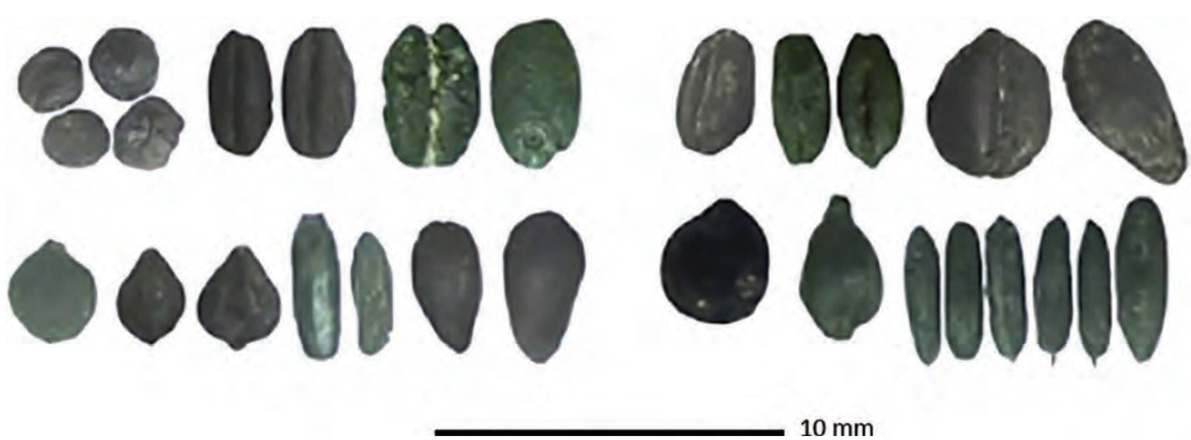

Figure 6.8 Charred plant seeds from Chahar Boneh and Ebrahimabad, Qazvin plain (after Ilkhani *et al.* 2019).

Cereals were cultivated in many settlements of the central Iranian plateau using irrigation systems, and an irrigation canal of the Transitional Chalcolithic period has been excavated at Tepe Pardis on the Tehran plain (Coningham *et al.* 2004, 2006; Gillmore *et al.* 2009; Vidale 2018). Cereals such as barley and emmer wheat along with peas and legumes form the major diet components at all sites (Figure 6.8) (Ilkhani *et al.* 2019), and there is a notable shift from wild plants to domesticated plants, cereals above all, as we move from the Late Neolithic into the Transitional Chalcolithic. This economic strategy enabled and underpinned an increase in population during the Transitional Chalcolithic period, as attested in the increased density of settlements on the Tehran and Qazvin plains.

Craft specialisation: ceramics and architecture

Petrie (2011) has delineated the technological innovations that mark the start of the Chalcolithic of southern Iran, including a shift to calcareous clays from vegetal-tempered clays, the use of basic turning devices, the use of black rather than bichrome painted decoration and an increase in firing temperatures to between 850 and 1,000°C. Taken together these attributes are understood as characterising an increasing specialisation and centralisation of ceramic production. The evidence for ceramic production from the plains of north-central Iran during the period 5200–4200 BC indicates similar developments there (Kaspari-Marghussian 2019). Brief excavations at the site of **Kara Tepe** 30 km west of Tehran exposed possible pottery kilns associated with Cheshmeh Ali-style ceramics (Burton-Brown 1962, 1979).

Excavations at Zagheh and Tepe Pardis have provided some direct evidence of ceramic production including workshops and tools related to production (Fazeli 2006). Some 240 clay tokens (Figure 6.9) were found in excavations in Trench N30 at **Zagheh** (Fazeli Nashli and Moghimi 2013; Moghimi and Fazeli Nashli 2015). This density of tokens may relate to the distribution and receipt of batches of raw materials or processed commodities connected to the production activities taking place in this part of the site, suggesting a form of monitoring of movement of materials and/or products to and from the production area. Considered alongside the increasing evidence of seals and tokens from other highland Iranian sites such as Alou, Qara Tepe, Sialk, Tepe Hissar and Chakhmaqlokh (Alibaigi *et al.* 2011b; Moghimi and Davidi 2020), the rich token evidence from Zagheh contributes to the picture of a long-term development across the Iranian plateau of administrative technologies closely paralleling those attested in Chalcolithic Khuzestan and across Mesopotamia (Vidale *et al.* 2018: 28–29).

Tepe Pardis on the Tehran plain (Coningham *et al.* 2006; Fazeli *et al.* 2007; Petrie 2012: 289–290; Vidale *et al.* 2018: 28–29) contained burnt rooms interpreted as a ceramic production area but more likely a domestic quarter (Figure 6.10). A possible slow wheel was also found, with a diameter of 0.36 m, a thickness of 0.12 m and a pivot of animal bone. On the Qazvin and Tehran plains a variety of ceramics were produced that are technologically and stylistically different from those of the Late Neolithic period (Figure 6.11) (Fazeli Nashli *et al.* 2009). The

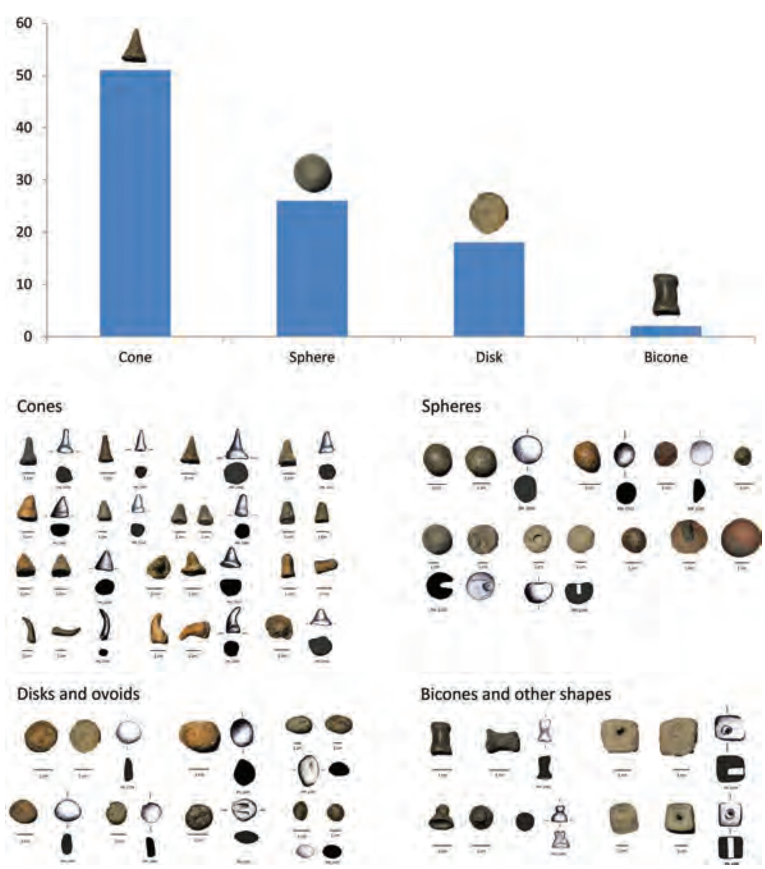

Figure 6.9 Clay tokens from Transitional Chalcolithic levels at Zagheh (data and images from Fazeli Nashli and Moghimi 2013; Moghimi and Fazeli Nashli 2015).

Figure 6.10 Tepe Pardis, architecture and terracotta slow wheel (photo credit: Hassan Fazeli Nashli).

Figure 6.11 Painted ceramic styles of north-central Iran in the Transitional Chalcolithic (photo credit: Hassan Fazeli Nashli).

finished products also attest a change in the scale and mode of production during the Transitional Chalcolithic period. Ceramics show a remarkable increase in uniformity between the core and surface colour. Such uniformity, brought on by greater control of the firing process, reflects technological improvement, greater skill among potters and standardisation. Distinct major categories of ceramics were produced across the three plains of Tehran, Qazvin and Kashan, including: (1) Zagheh standard ware; (2) Zagheh painted ware; (3) Zagheh simple ware; (4) Cheshmeh Ali (Sialk II) ware; (5) and, buff and red-crusted ware, which is found only at Zagheh (Marghussian *et al.* 2017). In fact, all these ceramic types have variable geographical and chronological distributions across and sometimes beyond Iran, some being highly localised (buff and red-crusted ware, Zagheh painted ware) and others characterised as "supra-regional" (Cheshmeh Ali ware; Dyson 1991; Dyson and Thornton 2009: 20). The socio-political frameworks underpinning these differential distributions are much harder to articulate and require dedicated research agendas involving integrated application of social and scientific methods.

Petrographic, chemical, mineralogical, and X-radiographic analyses of the main types of ceramics from sites on the Tehran and the Qazvin plains suggest that sites here were producing their own ceramics, including the fine Cheshmeh Ali ware (Fazeli *et al.* 2001, 2004). Thus, specialised production of technologically and stylistically similar ceramics took place separately on each of these plains (Wong 2008). In sum, the organisation of ceramic production between 5200 and 4300 BC at settlements of the Tehran and the Qazvin plains underwent substantial changes. Standardisation is suggested in the selection of raw materials, kilns were employed to achieve higher temperatures, and wheels and other techniques were used for mass production of pottery (Wong *et al.* 2010). The development of craft specialisation in the Transitional Chalcolithic period and the associated reorganisation in the ceramic industry indicate increasing cultural complexity and socio-economic development in this period.

In north-eastern Iran, the common presence of pottery kilns in and around domestic houses at Sang-e Chakhmaq East in the Transitional Chalcolithic levels suggests a household scale of ceramic production in that region, with local manufacture of vessels demonstrating a developed awareness of regional decorative styles including those called black-on-red Sialk II and Cheshmeh Ali (Thornton 2013a: 244). The briefly excavated site of **Ghaf Khaneh** in the Shahroud region appears to have been a single-period ceramic production site producing Cheshmeh Ali Red Ware presumably for local consumption (Roustaei 2018). Fifth-millennium BC pottery styles at **Shir-i Shian** in the same region also attest wide contacts across southern Turkmenistan, at sites such as Anau level IA, to north-central Iran via Aq Tappeh and many other sites (Dyson and Thornton 2009; Thornton 2013b: 190), including **Tepe Pahlavan** on the Jajarm plain (Vahdati 2010; Kharanaghi *et al.* 2016). On the basis of ceramic distributions across the region, Dyson and Thornton (2009: 20) characterise north-eastern Iran in the Transitional Chalcolithic as playing an important role in "hybridising and thereby 'translating' technological and cultural developments that allowed their rapid acceptance between distant communities." Increased evidence for fibre and textile (wool?) production through the Transitional Chalcolithic comes in the form of spindle whorls, found in increasing quantities at all sites of this period (Helwing 2013b: 84), while early steps in metallurgy also begin to be visible at many sites (Thornton 2009; Weeks 2012, 2013b).

Malek Shahmirzadi (1977; Malek Shahmirzadeh 1979, 1990) has suggested that there may also have been specialisation in the planning and construction of architecture, as attested in the regular house-plans and building techniques at **Zagheh** where a considerable extent of buildings was exposed (Figure 6.12). Very striking amongst them is the Painted Building (Figure 6.13) (Negahban 1979), with occupation dated to *c.* 4500 BC (Vidale *et al.* 2018: 21), whose features include a large main hall with raised platforms and a circular fireplace built on clean sand. Walls and platforms were painted red with a black and white meander pattern. Eighteen wild goat skulls were mounted on the walls, and at least 30 female figurines were found outside and around the building's main entrance (Negahban 1984). Eight female adults were buried directly to the south of the Painted Building (see below). Late fifth millennium BC architecture in Tepe Sialk phase II consists of well-built rectangular casemate-type walls of mudbrick (Ghirshman 1939: pl. 58), while at Yan Tepe in the Qazvin plain there is also evidence of skilful use of mudbrick in large-scale construction (Majidzadeh 2010). In north-western Iran, buildings at Dalma Tepe (Hamlin 1975) continue the local Neolithic tradition of small-scale houses of mudbrick. In the Transitional Chalcolithic levels at Sang-e Chakhmaq East, there are structures similar to those of Sialk II, with finger-impressed mudbricks and internal hearths (Masuda *et al.* 2013: 209; Thornton 2013a: 244).

Excavations at **Qara Tepe** on the Qomrud plain have advanced our view of the nature of interaction, craft activity and architecture on the north-central plateau during the fifth millennium BC (Kaboli 2005). At 8 ha in area, Qara Tepe is one of the largest sites on the ancient road connecting Qom with Rayy, south of Tehran. Excavations have uncovered *c.* 1000 years of occupation. Bakun-style ceramics of Fars province occur with typical Sialk II and III_{1-3} (Transitional and Early Chalcolithic period) ceramics, indicating connections between the communities of Fars and the central plateau during the fifth millennium BC. Numbers of copper tools (pins, nails and needles) were recorded at Qara Tepe along with evidence of pottery kilns and slag, suggestive of

Figure 6.12 Zagheh, plan of Transitional Chalcolithic architecture (adapted from Malek Shahmirzadeh 1979: plan I).

specialised craft activities. Morteza Hessari (2011) and Mir-Abedin Kaboli (2005) have reported stamp seals from the Early Chalcolithic levels at Qara Tepe resembling those of Susa A (see below, Figure 6.45), and there is also a well-constructed monumental building with multiple rooms, painted plaster wall-faces, all destroyed at the end of the fifth millennium BC. There are also large storage jars painted with elaborate designs.

Mortuary practices

From the 1970s excavations at **Zagheh**, Malek Shahmirzadi (1977) reported 23 individual burials. Burials within the village houses include adults, male and female, and children, many painted with red ochre and some with modest numbers of ceramic vessels, stone cosmetic palettes, and stone beads. The spatial organisation of the burials may be divided into four groups: (1) infants tend to be buried in roofed areas and adults in open areas; (2) adults buried in the architectural units near the Painted Building were buried in roofed areas; (3) some adults were buried in public spaces, such as in the square and lanes or corridors; and (4) most of the individuals in the structural units (open or roofed areas) did not receive burial goods. It is striking that one of the richest burials at Zagheh, with multiple beads made from a range of valued stones and shells, was that of a child. Vidale *et al.* (2018) argue against the conventional assumption that rich child burials indicate inherited rather than acquired status, to suggest that at Zagheh they might represent a form of social compromise, whereby elaborate burial for adults was considered too socially divisive but was regarded as acceptable for children.

Tala'i (1999) published an extraordinary assemblage of eight adult female burials, aged 25–30 years, in the open area to the south of the Painted Building at Zagheh (Figure 6.14). These burials are distinguished by their location, the attitude of the skeletons in facing and reaching towards the Painted Building, the extensive use of red ochre on their faces, even inside the mouth, and the high numbers of beads of a range of stones and shell, most of which appear not to have been locally made (Vidale *et al.* 2018: 21–25). These include necklaces, armlets, bracelets, belts, diadems and objects placed near the skulls. The placement of the arms of the buried females is notable, with arms and hands outstretched in front of the face of the body, reaching towards the nearby Painted

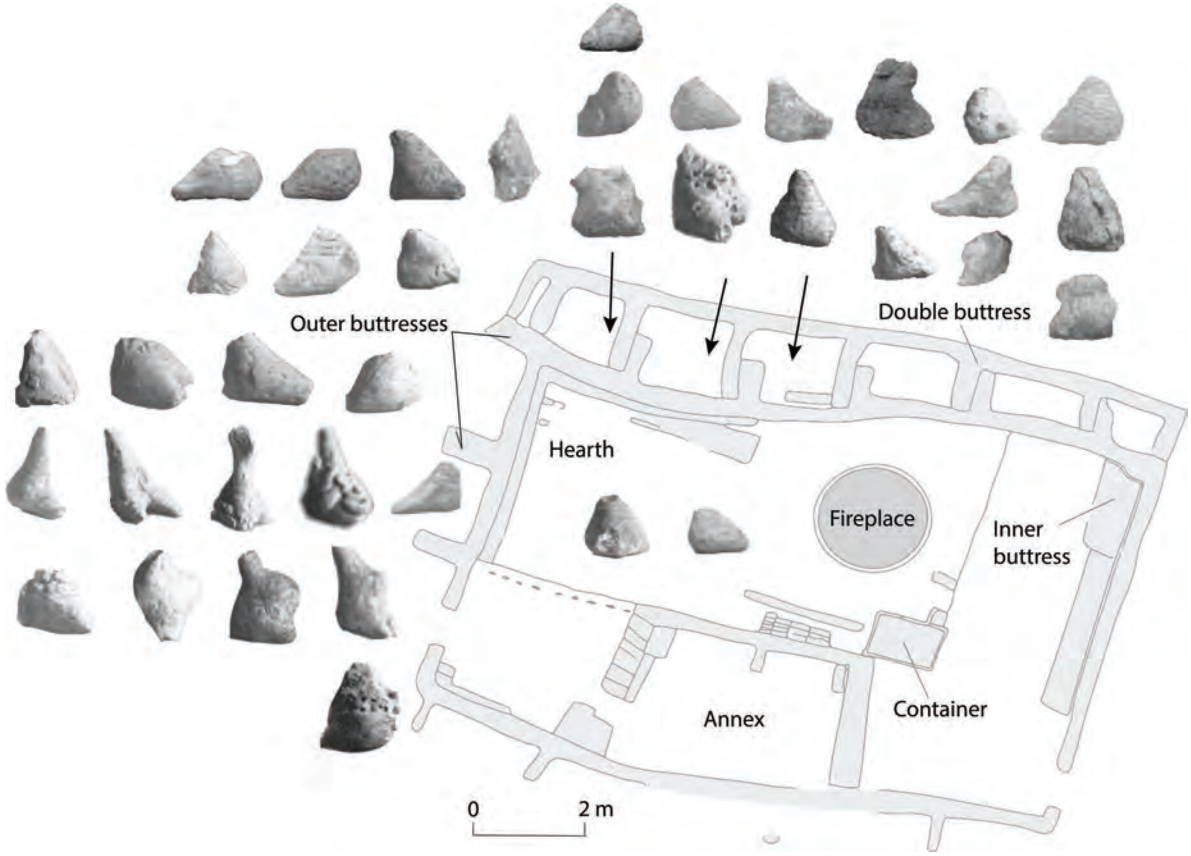

Figure 6.13 Zagheh Painted Building with schematic distribution of figurines (adapted from Negahban 1979, 1984).

Figure 6.14 Zagheh, adult female burials close to the Painted Building (Tala'i 1999: Figures 5–6).

Building in a classic pose of divine accolade. Combined with the location of female figurines to the west and north of the Painted Building (Negahban 1979, 1984; Daems 2004: 12), these burials further underline the building's special nature and its strong female connections. One suggestion is that the Painted Building was a special place for women to give birth. Vidale *et al.* (2018: 34), by contrast, interpret this building as a "bachelors' house," an arena for the negotiation of identity and induction into social mores for young males, while acknowledging the gendered significance of the female burials and figurines.

At **Cheshmeh Ali** (Figure 6.15), Schmidt's team recovered the remains of 174 burials, of which 34 belong to the prehistoric period (Gustavel and Fazeli Nashli in press). All 34 burials appear to have been primary inhumations, with the bodies interred below the ground surface. There is no evidence of compound or secondary

Figure 6.15 Cheshmeh Ali, view of site (photo credit: Hassan Fazeli Nashli).

inhumations. The general pattern at Cheshmeh Ali is for graves to be associated with houses and private spaces spread throughout the community, rather than for use of formal cemeteries. This practice appears to be a widespread cultural preference for the Late Neolithic and Transitional Chalcolithic communities of north-central Iran at sites such as Tepe Pardis, Zagheh and Tepe Sialk. It is telling that there is not a great range in the quantity or quality of grave goods, arguing that there is little class differentiation between the inhabitants buried at the site. Local and regional burial goods include ceramics, copper tools and stone palettes. The exotic and imported materials comprise ornaments of materials such as lapis lazuli, turquoise, and marine shells. A single burial at Tepe Pardis was associated with beads of turquoise, agate, shell and lapis lazuli, which suggests that the burial practices at Pardis align with those discussed above from other Transitional Chalcolithic sites of the north-central plateau of Iran (Fazeli *et al.* 2007; Vidale *et al.* 2018).

From **Tepe Sialk** on the Kashan plain, 39 human skeletons, dating from the late fifth to the early first millennia BC were excavated by Ghirshman and studied by Vallois (1939). This sample included six individuals from the late fifth and five individuals from the early fourth millennia BC. The early burials were coated with red ochre as at Zagheh, and shell ornaments from the Persian Gulf also occur. There is some evidence for deliberate headshaping of male and female adults (Kurth and Rohrer-Ertl 1980). During the 2009 excavation at Tepe Sialk North, a cluster of six burials was excavated within the Late Neolithic-Transitional Chalcolithic stratum, *c.* 5400 BC (Figure 6.16) (Sołtysiak and Fazeli Nashli 2010, 2016). Of the six burials, one was a double burial with both cremated and uncremated human bone, four were cremations, and one included the articulated skeleton of an infant placed in a pit grave filled with numerous sherds. Although cremation is rare in all periods in Iran, as many as five examples were discovered at Tepe Sialk. The bodies of adults were burned, whereas the bodies of infants were both cremated and buried without burning. At Sang-e Chakhmaq East burials change from the Neolithic tradition of inhumations laid flexed on their sides to a Chalcolithic practice of bodies laid extended on their backs (Thornton 2013a: 244, 2013b: 187). Human burials at the mid-fifth millennium BC site of Shir-i Shian on the Damghan plain appear to have ceramic vessels as grave goods (Dyson and Thornton 2009: 18).

Grave goods from Transitional Chalcolithic burials tend to be simple and modest in quantity, principally in the form of beads, but they are often made of exotic materials such as obsidian turquoise, seashell, lapis lazuli and copper. The presence of such materials in Transitional Chalcolithic communities widely distributed across northern Iran argues both for their participation in extensive networks of engagement, directly or otherwise, with distant contemporaries and for an increased social role for such materials and commodities, arguably as markers of prestige (Helwing 2013b: 85).

The nature of society: hierarchical or transegalitarian?

Considering all the evidence discussed above, through the course of the Transitional Chalcolithic of northern and central Iran we can detect a slow but steady transformation of Iranian society, marked by developments in the following fields: population growth indicated by increased numbers of settlement sites with some evidence for basic site hierarchy; large-scale shift to reliance on domesticated goat and sheep and a limited range of crops with some use of irrigation, while continuing some traditional hunting-gathering practices; craft specialisation

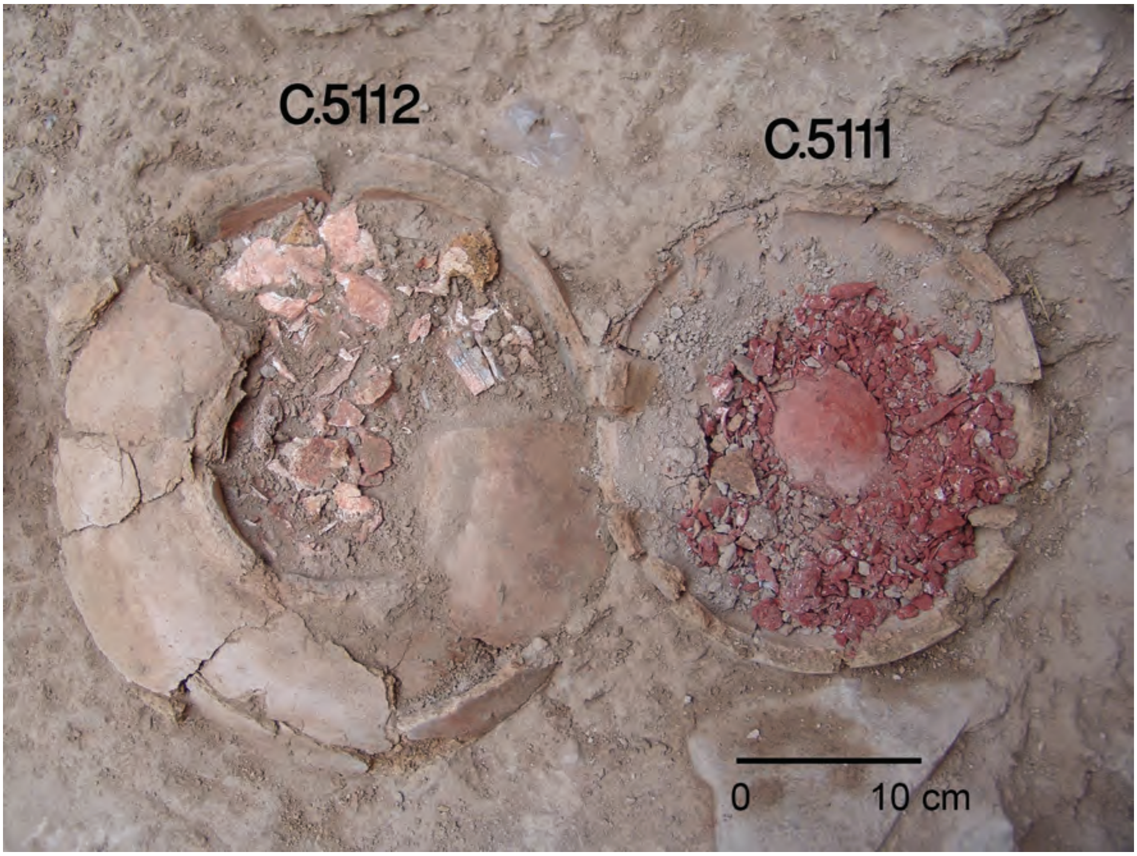

Figure 6.16 Tepe Sialk, cremation burials of the Transitional Chalcolithic (photo credit: Hassan Fazeli Nashli).

in ceramics and architecture along with early steps in metallurgy; increased use of administrative technology as attested in clay tokens; increasing concern with cult and religion as attested in dedicated buildings and moderately differentiated burial practices; and steadily increasing levels of engagement in short- and long-distance networks of exchange enabling movement of cherished exotic materials.

Whether these developments mark the appearance of stratified, hierarchical societies is still an open question (Fazeli Nashli and Matthews 2021). Evidence for difference is not evidence for hierarchy. The detection of hierarchy requires us to present evidence for individuals or groups of individuals with, in Bogucki's words (1999: 257), the "sustained ability to claim control over a specific, bounded population, its internal social affairs, and its external economic relations." As it currently stands, the available evidence does not support such an interpretation. We propose that the communities of the Iranian plateau can be situated within the context of what researchers such as Crumley (1995) and Bogucki (1999) have called heterarchical and transegalitarian societies. These concepts provide a flexible framework, not pyramidal in structure, which allows differentiated material evidence to be viewed in a variety of shifting lights according to context. Bogucki (1999: 257) has elaborated on the idea of heterarchy as "an alternative configuration of social relations," valuable in the analysis of "situations of increasing complexity without apparent centralized control." He argues that the transformative element in the development of societies from transegalitarian to hierarchical is when the domestic sphere is dominated by "some formalized and structured public life" (Bogucki 1999: 258), which might be manifest in a range of ways including large non-residential buildings or centralised control over craft production. It is notable that Wong *et al*.'s study (2010) of Cheshmeh Ali type ceramics from a range of sites on the Tehran and Qazvin plains concluded that, despite striking similarities in vessel forms and decorative schemes, pottery production was organised at local levels with no evidence for centralised control or of integration of production into a broader regional economy of redistribution.

Following the arguments of Drennan and Peterson (2012: 73) we might view the Transitional Chalcolithic societies of Iran as "supra-local communities" with regionally specific characteristics that transcended and connected individual settlements, as richly attested in ceramic styles and burial practices, for example, coupled with the development of central places that served as a focus for a range of social, economic and ritual activities. The significant sites of Zagheh on the Qazvin plain and Sialk on the Kashan plain may be interpreted in this way. In sum, the Transitional Chalcolithic communities of northern Iran were certainly complex and multi-stranded, but there is little evidence to suggest that they had become truly hierarchical by the end of the Transitional Chalcolithic period in the later fifth millennium BC. Whether we can associate the transegalitarian nature of these early human societies of northern Iran with the later "failure" of early urban take-off in this region, as opposed to other regions of Iran and its neighbours in the late fourth and early third millennia BC (Vidale *et al.* 2018: 36), remains a questions for focused future research.

The developed Chalcolithic of north-central Iran, 4300–3300 BC

As we turn to examine the last millennium of the Chalcolithic across northern and central Iran, from *c.* 4300 BC, we note that the pace of change steps up with regard to both the material attributes of societies and the underpinning socio-economic structures. By the end of the period there can be little doubt that complex hierarchical societies existed across much of Iran, but alongside them and sometimes within them, more ancient ways of life continued to survive and thrive. As in the previous section, we here examine evidence for a range of socio-cultural components in order to explore the nature of developed Chalcolithic societies of north-central Iran.

Settlement patterns and food procurement strategies

Figure 6.6 suggests a steady fall in settlement density across the Qazvin and Tehran plains after the end of the Transitional Chalcolithic period, but if we divide the number of sites by the number of centuries in each period, we see rather a stable pattern of site density throughout the full Chalcolithic period. At the same time, certain key sites appear to increase in size and importance through the late fifth and early fourth millennia BC (Helwing 2013b: 85), suggesting a degree of settlement hierarchy. Prime amongst these sites are Tepe Sialk on the Kashan plain (Ghirshman 1939; Malek Shahmirzadeh 2004), Ghabrestan and Ismailabad on the Qazvin plain (Tala'i 1983b; Fazeli Nashli *et al.* 2009), Cheshmeh Ali on the Tehran plain, and Qara Tepe on the Qomrud plain (Azarnoush and Helwing 2005: 197–198; Kaboli 2005).

Regarding food resources, later Chalcolithic societies show a fully developed dependence on domesticated goat and sheep as well as on cereals and a limited range of other crops (Mashkour *et al.* 1999; Mashkour 2002). Towards the end of the Chalcolithic, the appearance in the highland zone of Iran of specific pottery types such as spouted vessels and bevelled-rim bowls, may well suggest shifts in cooking and eating practices at least by certain components of society (Potts 2009; Goulder 2010). Occurrences of grape seeds in archaeobotanical assemblages, as at Tepe Hissar and **Tepe Damghani** (Costantini and Dyson 1990; Tengberg 2012b: 187), suggest significant development of viticulture through the fourth and third millennia BC.

Ceramics, metallurgy and networks of material movement

In ceramics the Early Chalcolithic is marked by a change from black-on-red to black-on-buff wares, also known as Sialk $III_{6–7}$ style after its initial discovery at **Tepe Sialk** (Ghirshman 1939; Majidzadeh 1978; Dyson 1991; Petrie 2011, 2012; Helwing 2013b; Abbasnejad Seresti and Tashvigh 2016; Vidale *et al.* 2018). Production of black-on-buff wares was enabled by the development of a new type of kiln, as excavated at Sialk level III, in which pottery could be fired at temperatures up to 1,000°C (Hansen Streily 2000). Black-on-buff wares are distributed across central and northern Iran, with the exception of the northwest where Chaff-faced Ware is dominant, suggesting connections of that region with communities across the southern Caucasus, eastern Turkey and Upper Mesopotamia (Marro 2010; Helwing 2013b: 85). Ceramics of Dalma type occur at sites on the Tehran and Qazvin plains, with connections through sites in Zanjan province (Alibaigi *et al.* 2011b, 2012a; Motarjem and Sharifi 2014; Niknami *et al.* 2017), indicating a degree of contact amongst communities across north-western Iran, north-central Iran and the central Zagros.

The development of skills in metalworking is a major achievement of the full Chalcolithic period in Iran (Tylecote 1970; T. Potts 1994; Thornton 2009; Weeks 2012, 2013b; Abbasnejad Seresti 2017). Copper is the most significant metal in this process but at the same time initial experiments with working of gold, silver and lead were underway, as attested at sites such as **Shoghali** southeast of Tehran (Figure 6.17) (Malek Shahmirzadeh 2003; Pernicka 2004; Nezafati *et al.* 2008b; Nezafati and Pernicka 2012; Weeks 2012: 303; Nezafati and Hessari 2017). The importance of Iran in the early development of copper-working has long been recognised (Holzer and Momenzadeh 1971; Beale 1973; Berthoud *et al.* 1982; Moorey 1982; Stech and Pigott 1986; Pigott 1999;

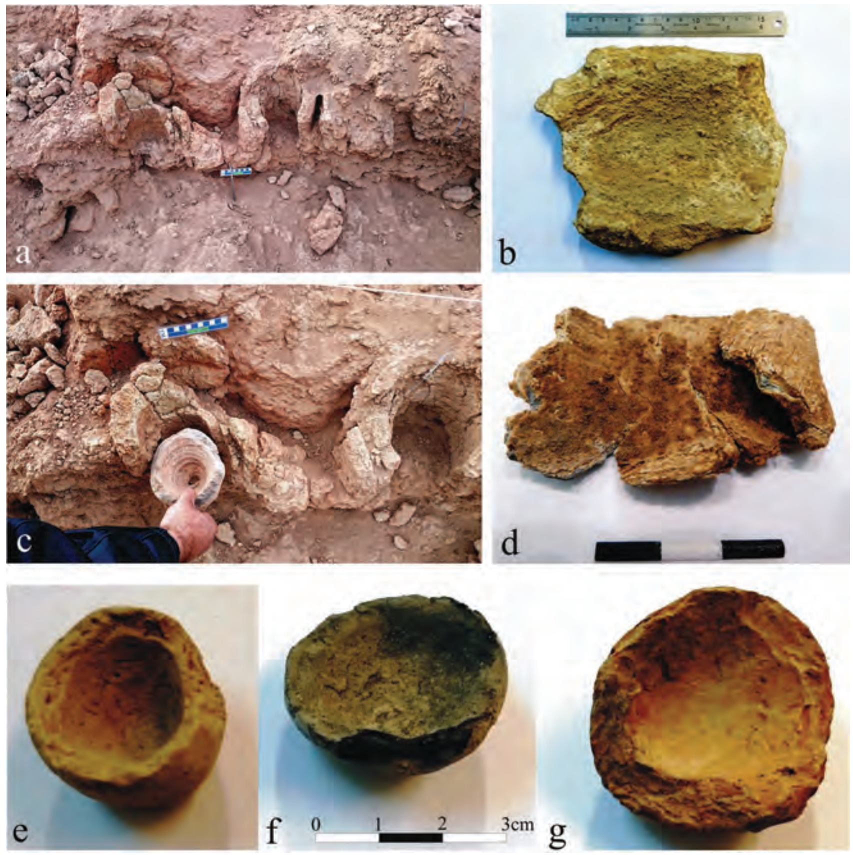

Figure 6.17 Shoghali, evidence for early silver production (Nezafati and Hessari 2017: Figure 4) (photo credit: Morteza Hessari).

Figure 6.18 Ghabrestan, view of excavated area (photo credit: Roger Matthews).

Oudbashi *et al.* 2012). Of great significance is the fact that Iran is blessed with a natural wealth of copper and copper-ore sources – more than 400 separate deposits across Iran (Nezafati *et al.* 2008b: 78) – as well as other metals (Harrison 1968; Berthoud *et al.* 1982). Key evidence for early copper-working comes from the site of **Ghabrestan** (Figure 6.18) on the Qazvin plain, dating to the late fifth and early fourth millennia BC (Negahban 1977; Majidzadeh 1979, 1981; Matthews and Fazeli 2004; Fazeli *et al.* 2005; Thornton 2009: 312). Majidzadeh's excavations revealed a copper workshop in level II (Middle Chalcolithic, 4000–3700 BC), located amongst a complex of potters' workshops and other buildings (Figure 6.19). Copper-processing features included small hearths, crucibles, moulds, ceramic pipes and 20 kg of copper ore in a large bowl. Intensive ceramic production is

Figure 6.19 Ghabrestan, plan of structures including coppersmith's workshop (after Majidzadeh 1979: Figure 1), and Middle Chalcolithic ceramics (photo credit: Hassan Fazeli Nashli).

also well-attested at the site, and there is a so-called Main Building with thick walls, which has been interpreted as a ruler's residence or a communal meeting place (Majidzadeh 1976: 128). In the Late Chalcolithic (3700–3500 BC) Level IV at Ghabrestan, bevelled-rim bowls appear in some quantities, possibly attesting Lower Mesopotamian or Khuzestan interest in copper production (Matthews and Fazeli 2004: 65) before the site was violently destroyed by fire around 3500 BC. More recent excavations at Ghabrestan and at the nearby site of **Tepe Sagzabad** have explored extensive areas of craft working through the Early, Middle and Late Chalcolithic phases (Azizi *et al.* 2012; Fazeli Nashli *et al.* 2013b: 112–113). Associated with the development of metallurgical expertise there is evidence for a collapse in lithic craft specialisation across the Tehran plain at the same time, doubtless due to the increased use of copper tools to fill roles previously undertaken by chipped stone tools (Fazeli *et al.* 2002).

Early copper metallurgy in Iran is attested at a range of other sites. A crucible and slag were found at **Cheshmeh Ali**, 4300–4000 BC (Fazeli 2001). Cold-hammered and cast artefacts, including daggers, axes, chisels, awls, pins and needles, as well as artefact moulds are frequent in levels I–IV (Matthews and Fazeli 2004: 65–66; Pernicka 2004; Nezafati *et al.* 2006). As at Ghabrestan, the development of copper metallurgy at **Tepe Sialk** (Nezafati *et al.* 2008a) is accompanied by evidence for social differentiation in architecture and for external engagement (Figure 6.20). Following possible destruction by earthquake (Berberian *et al.* 2012), buttressed houses in Sialk III_4 are replaced by a single multi-roomed structure in Sialk III_{6-7}. After the destruction of Sialk III by fire, in Sialk IV_1 a well-built structure is situated atop Sialk South, and is associated with Uruk- or Susa-related items such as pottery forms, cylinder seals, seal impressions and numerical and numero-ideographic tablets

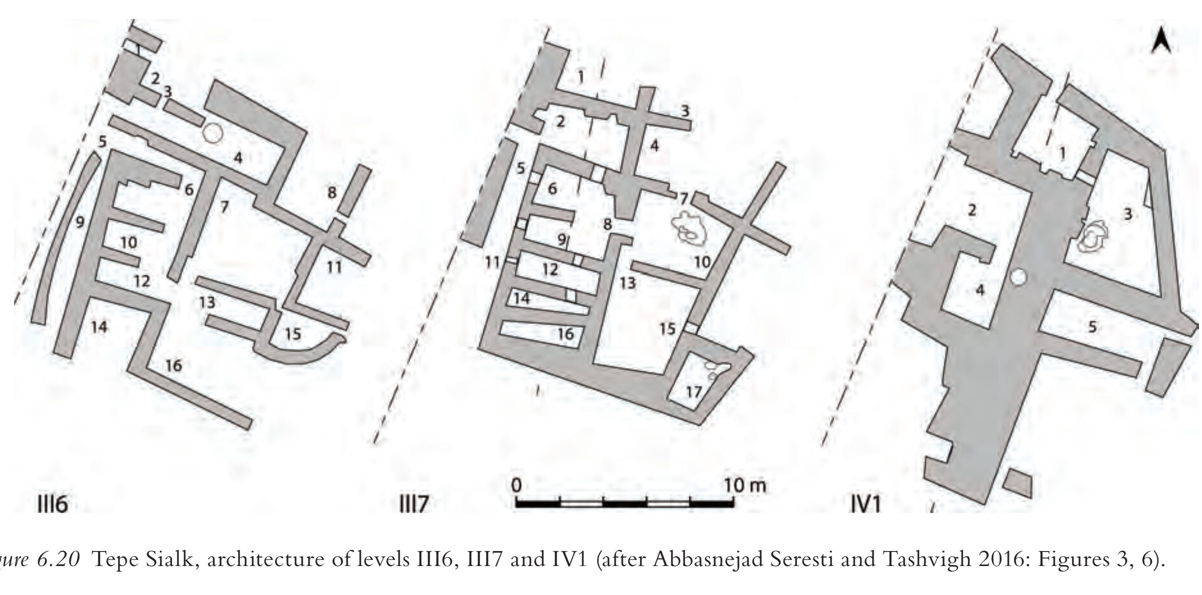

Figure 6.20 Tepe Sialk, architecture of levels III6, III7 and IV1 (after Abbasnejad Seresti and Tashvigh 2016: Figures 3, 6).

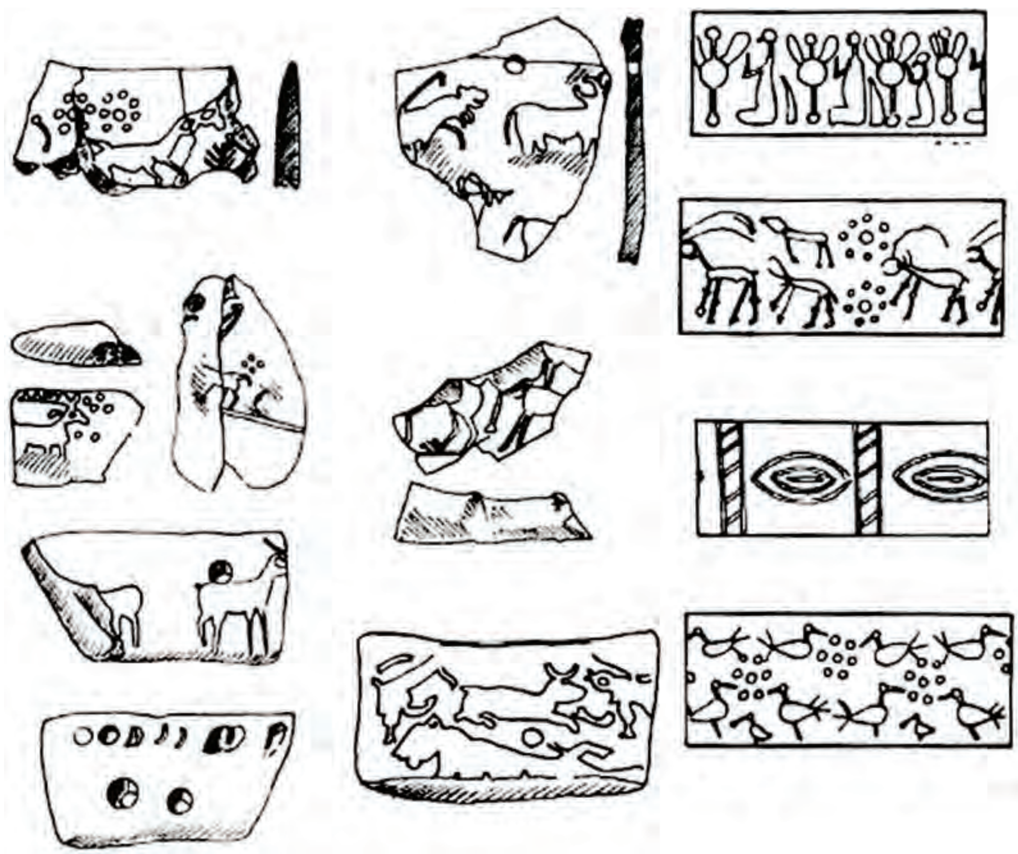

Figure 6.21 Tepe Sialk, administrative artefacts from level IVA (after Pittman 2013b: Figure 16.32) (image courtesy of Holly Pittman).

(Figure 6.21) (Pittman 2013b: Figure 16.32; Abbasnejad Seresti and Tashvigh 2016). This complex is interpreted by Algaze (1993: 55–56) as an Uruk control post, while Pittman prefers to interpret this assemblage as representing an early stage in the development of the Proto-Elamite horizon in Iran (Chapter 7; Pittman 2013b: 329). In fact, it could be both. An unusual type of clay sealing occurs in Sialk IV_1 in the form of thin labels with a single pierced hole, as if the sealings were attached as labels to containers perhaps as a means of identifying their owner or sender (Amiet 1988: pl. 2.5). The same perforating technique was used on Proto-Elamite tablets from Sialk (Chapter 7; Ghirshman 1939: 67; Dyson 1987: 663). Algaze has stressed the strategic location of Sialk, like Godin Tepe (see below) commanding a major route across the Iranian plateau, and therefore with the potential to control movement of cherished raw materials and commodities. The practice of using stamp seals on clay sealings, in association with a variety of token forms is also abundantly attested at the site of **Alou** on the Qazvin plain (Niknami *et al.* 2020).

Probably performing a role similar to that of Sialk in this period, the site of **Tepe Sofalin** near Tehran, is located close to the Great Khorasan Road that skirts the northern edge of the central plateau (Figure 6.1). While Sofalin is important as a Proto-Elamite site (Chapter 7), some of the ceramics and the administrative artefacts from the site, including a hollow clay ball with tokens and several numerical tablets (Hessari 2011; Dahl *et al.* 2013: Figure 18.17) show clear connections with the Late Uruk/Late Susa II world (see below). Both Sialk and Sofalin thus indicate continuity of activity across the Late Susa II/Proto-Elamite transition, which is otherwise matched only at Susa and probably also at **Tall-e Geser** on the Ram Hormuz plain (Chapter 7; Wright and Carter 2003: 67; Alizadeh *et al.* 2013a). As with Sofalin, the site of **Meymanatabad Tepe** southwest of Tehran by the Shad Chai river has significant evidence of occupation through the later fourth millennium BC (Kashani *et al.* 2013; Yousefi Zoshk *et al.* 2015, 2018), including black-on-buff wares with painted animal motifs, string-cut conical bowls, bevelled-rim bowls and classic Uruk-style trays, as well as copper tools, in association with large-scale mudbrick architecture (Figures 6.22–6.24). Situated along the Great Khorasan Road, both Sofalin and Meymanatabad likely played a role in connecting Uruk and Late Susa II sites of Lower Mesopotamia and Khuzestan with the resource-rich regions of the highland zone.

Figure 6.22 Meymanatabad Tepe, selection of pottery styles (Yousefi Zoshk *et al.* 2015: Figure 10) (images courtesy of Rouhollah Yousefi Zoshk).

Figure 6.23 Meymanatabad Tepe, large-scale mudbrick architecture view (image courtesy of Hassan Afshari).

In north-eastern Iran, there is a cultural divide between sites that show affinities with Central Asian settlements to the east and those with connections westwards to the Iranian plateau and beyond (Kohl *et al.* 1982; Garajian 2006; Thornton *et al.* 2013a). Extensive surveys of regions including the plains of Jajarm (Dana and Hozhabri 2019) and Roshtkhar (Rezaei *et al.* 2019) have recovered ceramics of Late Chalcolithic date from a handful of sites, including significant representations of Uruk/Late Susa II ceramics such as droop-spouts, pierced nose-lugs, low-sided trays and bevelled-rim bowls from excavations at the site of **Kaleh Kub** in south Khorasan (Azizi Kharanaghi *et al.* 2020). Late Chalcolithic grey ware ceramics from the 40 ha site of **Tepe Chalow** on

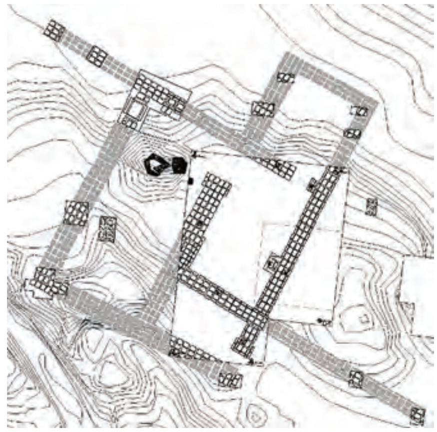

Figure 6.24 Meymanatabad Tepe, large-scale mudbrick architecture plan (image courtesy of Hassan Afshari and Rohollah Yousefi Zoshk).

the Jajarm plain take forms comparable to material from sites in southern Turkmenistan (Vahdati *et al.* 2019). On the Damghan plain, initial settlement at **Tepe Hissar**, level I, consisted of a dispersed layout with functionally distinct quarters, including a domestic housing neighbourhood and separate craft production areas concerned with processing of copper, steatite and lapis lazuli (Yule 1982; Dyson and Remsen 1989; Tosi 1989; Pigott 1999; Dyson 2009; Thornton 2014; Gürsan-Salzmann 2016). Specialised production of elaborately painted pottery was also taking place at Hissar (Yule 1982: Abb 4–7; Dyson 1991). At this time, and later in levels II-III, Hissar appears to have functioned as a major intermediary in the processing and shipment of lapis lazuli from its source in the Badakhshan mountains of northern Afghanistan onwards to the west, with specialised craft workers at Hissar preparing blanks and finished artefacts both for local consumption and for onward transport (Bulgarelli 1974; Casanova 1997; Lazzari and Vidale 2017: 47–49). In addition to working of lapis lazuli, other materials including calcite, limestone and chlorite were also intensively worked at Hissar (Tosi and Bulgarelli 1989; Casanova 2013).

Over 360 human burials, including some collective burials of up to 12 individuals, were excavated from Hissar levels I–III, many of them dug into the floors of abandoned houses (Roustaei 2004; Thornton *et al.* 2013: 132; Afshar 2017; Afshar *et al.* 2019). It is notable that the cultural connections of Hissar change direction during the fourth millennium BC, with some evidence for conflict and inter-personal violence (Afshar *et al.* 2018). For the earlier half of the millennium the material links, in ceramics, technology and architecture, are with sites to the west and southwest, such as Sialk and Arisman, while in the latter half of the millennium, Hissar's material culture connects the site firmly with sites to the east and northeast in the Gorgan plain and in southern Turkmenistan (Helwing 2006). At the same time, around 3500 BC, Hissar's key role in the processing of lapis lazuli appears to increase greatly in scale, along with evidence for elite burials and increased wealth at the site. The shift in cultural orientation at Hissar may relate to shifting control over trade routes and consequent realignment of economic and cultural relations (Thornton 2014). One stimulus to this process of centralisation and administration of production may have been the intensification of connections with the Uruk- and Susa-related world to the southwest, whether from Lower Mesopotamia or Khuzestan. Inscribed tablets and tablet blanks from Hissar appear to align more with Uruk-style rather than Proto-Elamite-style texts. Subsistence and diet throughout the occupation at Hissar were founded on cultivation of wheat and barley alongside husbandry of cattle, sheep, goat and pig with significant hunting of gazelle, red deer and wild birds (Costantini and Dyson 1990; Mashkour and Yaghmayi 1998; Afshar *et al.* 2019). although the human remains of Hissar I-II attest significant levels of malnutrition, worsening into Hissar III (Figure 6.25) (Afshar 2017).

Beyond north-eastern Iran and into southern Turkmenistan, the piedmont plains north of the Kopet Dagh ridge, stretching from the shores of the Caspian Sea to the delta of the Tedjen river, were occupied by sophisticated village communities already with a long tradition of local farming practices and developed technologies in ceramics, ground stone and metallurgy (Hiebert 2002; Bonora and Vidale 2013). During the Middle-Late Chalcolithic, partly contemporary with the Uruk-Late Susa II impact on western and central Iran, communities of southern Turkmenistan developed into large-scale, arguably urban, sites, characterised by defensive walls, monumental gates, elaborate buildings with wall paintings (possible *hammams* – see Bonora and Vidale 2013: 160), specialised craft quarters, trade in metals, semi-precious stones and sea shells, differential treatment of human burials and the use of stamp seals and clay sealings. Key sites in this local episode of urban flowering include Namazga-depe, Kara-depe, Altyn-depe, Ilgynly-depe and Geoksyur 1.

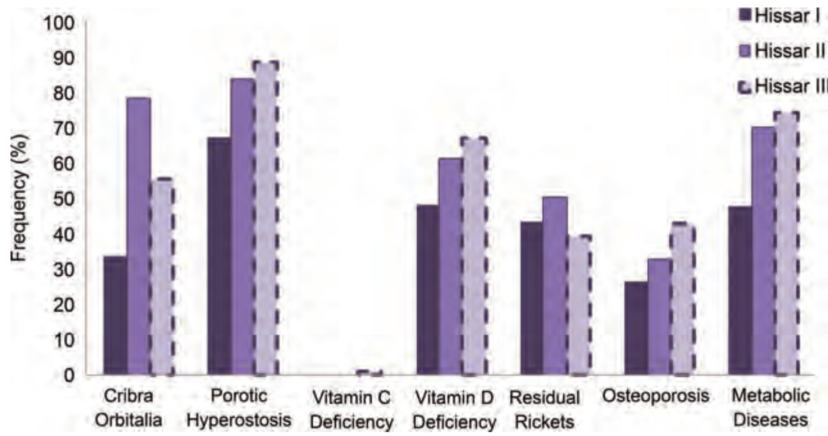

Figure 6.25 Tepe Hissar, metabolic disease profiles period by period (after Afshar 2017: Figure 9).

Within central Iran, a degree of functional specialisation in site location is indicated by the emergence of copper-smelting sites at **Arisman** 60 km to the south of Sialk (Figure 6.26) (Chegini and Helwing 2011; Helwing 2013b: 86). The copper-working sites at Arisman are hugely informative on the development of copper metallurgy through the late fifth, fourth and third millennia BC (Helwing 2011b; Pernicka *et al.* 2011). Evidence from Arisman includes waste from smelting of copper ores and production of arsenical copper in pit furnaces through use of crucibles, using ores from at least four different sources (Helwing 2013b: 86). By the late fourth millennium BC at Arisman, smelting in crucibles was superseded by large reaction vessels including a copper smelting furnace, and silver was being extracted from argentiferous metallic lead by means of cupellation (Weeks 2012: 301–303). Many casting moulds for ingots, flat axes and a double axe were also found at Arisman, in forms that match finished artefacts found at sites such as Susa and Sialk as well as at many sites of Late Uruk/Jemdet Nasr/Early Dynastic I date of central and northern Mesopotamia and southern Anatolia (Helwing 2011c: 268). Ceramics from Arisman show a wide range of connections across Iran (Boroffka and Parzinger 2011), and the silver worked at the site was coming from the Anarak region, 200 km to the east (Helwing 2012: 510).

New techniques such as casting and smithing enabled the production of large, complex artefacts such as daggers and double axes, which were widely circulated across and beyond Iran. Chalcolithic double axes from the Susa I cemetery may well have been produced in matching moulds found at Ghabrestan and Arisman (Hole 1992; Helwing 2011b, 2013a) and their distribution reaches the southern Caucasus (Boroffka 2009). It is striking that significant finds of copper artefacts have not been made at Lower Mesopotamian sites such as Eridu and Ur in contexts pre-dating *c.* 3500 BC, suggesting that copper "was neither vital for subsistence nor valued as a prestige commodity" (Moorey 1994: 256) by the occupants of those sites at that time.

Figure 6.26 Arisman, view of the site looking southwest, with the Karkas mountains beyond, and sherds and slag in the foreground (photo credit: Hermann Parzinger, DAI-EA; photo no: Teh50_fig163).

Later Chalcolithic societies of north-central Iran: the emergence of societal complexity and its (temporary) collapse

By the end of the Chalcolithic period at *c.* 3300 BC, communities of northern and central Iran appear to have been hierarchical and were certainly complex, characterised above all by differential access to and consumption of rare and cherished materials and artefacts, principally of metal. There are also significant indications of differentiation in architecture and in allocation of internal space within settlements for specific purposes, suggestive of central planning and control. Intensified levels of long-distance engagement and of administrative control over movement and storage of goods, attested by a significant increase in the use of seals, are also likely to be indicative of ranked societies with centralised control over multiple aspects of daily life. One result of this process was the increasing fragmentation of Iranian highland societies, as archaeologically expressed in their modes of living and material culture, which culminates in the disparate cultural groups of the succeeding Early Bronze Age, as we explore in following chapters.

Networks of engagement had existed for centuries prior to the full Chalcolithic, as attested by movement of obsidian and shells in the Neolithic or of semi-precious stones and other materials in the Transitional Chalcolithic, for example, but what appears to be new from *c.* 4000 BC is the intensified level of engagement by far-flung communities and the increasing levels of investment of materials and expertise in production of the commodities and artefacts featuring in these exchange networks, including major advances in metallurgy. In a thoughtful, highly informed review of the development and transmission through space and time of metallurgical skills in Iran and beyond, Lloyd Weeks (2013b) situates the technological advances in this field within their wider socio-cultural contexts. In particular, Weeks highlights the potential of the Uruk phenomenon of the mid-later fourth millennium BC as providing the transregional context for effective sharing of ideologies and material behaviours including metallurgical skills and knowhow, enhancing the capacity for multiple independent technological innovations across the entire geographic sphere of interaction; "If incorporation into the Uruk world provided the social context for the innovations of fourth-millennium BC metallurgy, then these innovations could have developed independently in the various metallurgical source regions of the Uruk world" (Weeks 2013b: 287).

Long-distance movement of materials and objects from *c.* 4000 BC was greatly facilitated by the use of domesticated donkeys as pack animals (Matthews and Fazeli 2004: 70; Benecke 2011; Potts 2011c), although goat are also perfectly capable of being trained as pack animals (Mionczynski 1992). The commissioning or procuring of exotic artefact production and of its transport must be viewed as projects requiring significant organisational capability as well as administrative oversight, arguably attested by the proliferation of stamp seals at sites such as Ghabrestan (Majidzadeh 2008: 43), Sialk (Ghirshman 1939) and Hissar (Schmidt 1937) from *c.* 4000 BC. It is tempting to associate such projects with elite-driven desire for acquisition of rare, difficult-to-acquire, therefore high-status objects such as copper daggers and axes, and so with the establishment of truly hierarchical or ranked societies within and beyond Iran through the course of the fourth millennium BC. Also of note is the significant level of Uruk- or Susa-related evidence, in the form of distinctive ceramic forms and perhaps also of early administrative technologies at sites such as Sofalin, Meymanatabad and Sialk, suggestive of long-distance networks of engagement connecting elite communities of the Lower Mesopotamian and Khuzestan plains with their contemporaries of the Iranian highland zones.

Across the northern Central Plateau of Iran, permanent human settlement in the form of occupied mounded sites appears to come to an abrupt halt at some stage in the mid-later fourth millennium BC, with little evidence for settlement through much of the third millennium BC (Fazeli *et al.* 2004; Pollard *et al.* 2013; Vidale *et al.* 2018: 11). Occupation at Sialk in level III ends in flames at *c.* 3400 BC and, following a hiatus of uncertain length, is succeeded by Proto-Elamite buildings and material culture very different in kind (Chapter 7; Ghirshman 1939, 58). As Barbara Helwing (2013b: 88) phrases it: "the late Chalcolithic period [of northern Iran] seems to have ended in a scenario of collapse around 3400 BC, following several centuries of rapid growth." The precise cause of this reversal to a preceding long-term trend of increasing settlement spread and intensity is not at all clear but impacts from climate change, earthquakes and floods cannot be ruled out (Vidale *et al.* 2018: 31). Much more investigation of environmental and palaeoclimatic records is required adequately to address this key problem. Despite these reversals, once human societies of the region succeed in regrouping and resettling, they do not restart from zero, but they take forward with them and build upon the major social, economic and technological advances made by their forbears in the region through the Chalcolithic period.

Ceramics and connectivity: Chalcolithic societies of the central and northern Zagros

To the west of the plains of north-central Iran, the Zagros range was host to distinctive human societies through the Chalcolithic (Moghaddam and Javanmardzadeh 2013), as it had been in the Neolithic. In this region a separate chronological scheme is conventionally applied, based largely on ceramic assemblages from the few relevant excavated sites of the region, in particular Tepe Giyan (Contenau and Ghirshman 1935) and Godin Tepe

(Henrickson 1985b), and from regional surveys on the Mahidasht, Kangavar, Songhor; Hamedan and Marivan plains and in Luristan (Young 1969; Goff 1971; Levine 1974b; Levine and McDonald 1977; Henrickson 1983; Levine and Young 1987; Hole 2007; Heydarian and Ghorbani 2016; Abbasnejad Seresti and Rezaei 2018; Zamani Dadaneh *et al.* 2019a, 2019b).

Excavations at a range of sites including Tepe Gheshlagh, Tepe Karvansara, Soha Chai Tepe and Tepe Kalanan are shedding new light on the Zagros Chalcolithic (Mucheshi *et al.* 2011; Alibaigi *et al.* 2014; Mucheshi 2014; Rahimi Sorkhani *et al.* 2017; Sharifi and Motarjem 2018). In broad terms, the ceramic assemblages of the highland zone throughout the Chalcolithic show both a desire for group expression of identity through recurrent use of stylised forms and decorative motifs (Henrickson and Vitali 1987: 43; Henrickson 1991), but also a significant degree of social interaction with lowland neighbours dwelling in the foothills and steppe zones to the west (Darabi 2020).

The Early Chalcolithic, 5500–5000 BC

Our knowledge of the first 500 years of the Chalcolithic in the region is limited to ceramic material recovered from extensive surveys of the major plains of the region (Figure 6.27). The type of pottery known as J Ware is found across the Mahidasht and valleys in the west of the central Zagros region (Henrickson 1985b, 1986; Abdi 2003b; Balmaki *et al.* 2013; Sharp and Kaercher 2018). J Ware bears some resemblance to contemporary Halaf pottery of Upper Mesopotamia although its manufacture and decoration are not as well-developed (Levine and McDonald 1977; Levine and Young 1987). More than 60 J Ware or Halaf-related sites were found in survey of the Mahidasht, some of them over more than 4 ha in area, suggesting a basic settlement hierarchy (Levine and McDonald 1977: Figures 3–4; Hole 1987b: 47–48), also attested on the Islamabad plain where J Ware sites are numerous (Abdi 2003b: 420). Sherds of painted pottery from Choga Mami and Ras al-Amiya in Iraq have been suggested as indicating Iranian connections at this time (Oates 1983: 259). Other occurrences of Late Neolithic-Early Chalcolithic ceramics in the central Zagros include Samarran-related material from

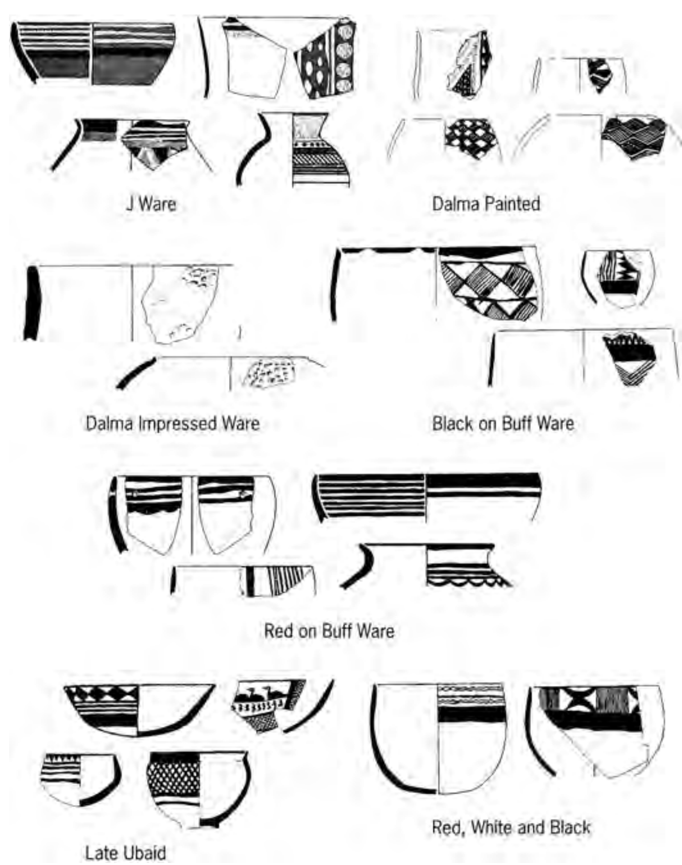

Figure 6.27 Early Chalcolithic pottery styles of highland western Iran (after Rothman and Badler 2011: Figure 4.4).

Giyan VA and a range of surveyed material from the central Zagros foothills (Darabi 2020), the Pish-e Kuh and Khorramabad (Goff 1971; Hole 2007), as well as the Hulailan and Saimarreh valleys (Mortensen 1975, 1976), showing some connections to excavated assemblages from Deh Luran (Chogha Sefid, Sabz and Khazineh) and Chogha Mish in Susiana (Garfinkel 2000). At **Tepe Gheshlagh** in Kurdistan province a deep sequence of occupation through the Late Neolithic-Chalcolithic transition includes ceramics with influences from Hassuna and Late Sarab Tadpole Ware succeeded by local Early Chalcolithic styles (Figure 6.28) (Motarjem and Sharifi 2014; Sharifi and Motarjem 2018).

The Middle Chalcolithic, 5000–3800 BC

In her classic studies Henrickson (1985b, 1991) divided the Middle Chalcolithic of the central Zagros into three phases, here treated in turn (also following Moghaddam and Javanmardzadeh 2013: 97–100). In Middle Chalcolithic I (*c.* 5000–4800 BC), the key pottery type of the region is co-called Dalma Ware, initially recovered at Dalma Tappeh in north-western Iran at the south-western edge of Lake Urmia (see above; Hamlin 1975; Henrickson and Vitali 1987). Dalma Ware is found across most of the Zagros region of western Iran, from southern Azerbaijan in the north to the Hamrin of east-central Iraq and the Khorramabad region in the south (Young 1963; Hamlin 1975: 120; Levine and McDonald 1977: Figure 5; Henrickson and Vitali 1987; Balmaki *et al.* 2013; Khosravi *et al.* 2013).

Dalma painted and Dalma-Ubaid pottery occurs at **Tepe Siahbid** and **Chogha Maran** on the Mahidasht, and at **Seh Gabi** and **Godin Tepe** on the Kangavar plain (Hamlin 1973, 1974b; Henrickson 1985a; Levine and Young 1987; Renette 2018: 297–314; Renette et al. 2021). The earlier Dalma types appear to be contemporary with Halaf and the later varieties with Ubaid in the Mesopotamian sequence (Henrickson 1985a; Hole 1987b: 46). As to what these varying distributions of ceramics styles might mean in social terms, Hole (1987b: 48) argues that within the highland zone of the Zagros "the presence of Halaf mixed with Ubaid and Dalma suggests a movement of peoples and perhaps an ethnic intermixing rather than trade."

Multiple sites with Dalma Ware have been recorded in surveys stretching from Iranian Azerbaijan to southern Luristan (Moghaddam and Javanmardzadeh 2013: 98). Dalma Ware is richly attested in a range of styles through multiple levels at Tepe Gheshlagh in the central Zagros along with husking trays in Hassuna style (Sharifi and Motarjem 2018). The socio-economic mechanisms by which Dalma Ware is so widely distributed, though with much regional variability, have barely been explored and there has been little application as yet of methods of analysis that might form the basis of such interpretations, for example by characterisation of clays, minerals and techniques used in the manufacture and decoration of the various types of Dalma Ware across their regional distributions (Tonoike 2012). A rare exception is the study by Henrickson and Vitali (1987), which applies instrumental neutron activation analysis (INAA) to Dalma ceramics in order explore local and regional production and distribution patterns, concluding that "Dalma stylistic homogeneity was a reflection of highland ethnicity rather than any far-flung, complex Dalma political or economic system" (Henrickson and Vitali 1987: 42), whereby the distinctive Dalma ceramic style served as a material indicator of shared tribal, linguistic and perhaps religious alignments.

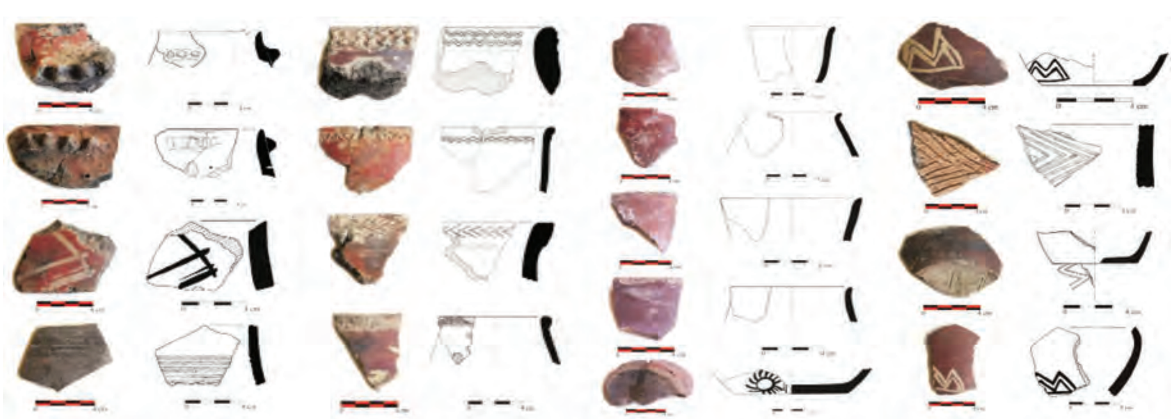

Figure 6.28 Chalcolithic pottery from Tepe Gheshlagh (after Motarjem and Sharifi 2014: Figure 24).

In the Middle Chalcolithic II phase, *c.* 4800–4200 BC, we see greater regionalisation in the ceramic assemblages of western Iran (Moghaddam and Javanmardzadeh 2013: 98–99; Motarjem and Sharifi 2014). On the Kangavar plain new painted wares appear including Seh Gabi, from level IX at Godin Tepe, featuring stylised goats as major elements of painted decoration (Henrickson 1985b; Levine and Young 1987). At **Tepe Gheshlagh** in the central Zagros, the Middle Chalcolithic levels have ceramics showing transregional connections to north-western Iran and across the Zagros to Upper Mesopotamia (Sharifi and Motarjem 2018).

In the south-western Zagros range of Pusht-e Kuh in Luristan, remarkable cemeteries of Middle Chalcolithic date have been excavated at **Hakalan** and **Dum Gar-e Parchineh**, spanning approximately a millennium from 4600 BC (Vanden Berghe 1974; Hole 1987b: 43–44; Haerinck and Overlaet 1996; Abdi 2003b: 433–434; Alizadeh 2008: 16–18). More than 200 stone cist tombs were excavated, exclusively of adult burials, and many of the tombs were used for multiple burials. Grave goods comprised principally pottery, and occasional items such as copper mace-heads, beads, stamp seals and stone tools (Figure 6.29), but many of the tombs had no grave goods at all. The painted pottery in the tombs consists of several regional styles (Henrickson 1985b; Alizadeh 2008: 17; Mutin 2012: 163), while a ceramic production centre for painted ceramics in the Ubaid style has been identified at **Kall Karim** in the north-western Pusht-e Kuh (Mazaheri 2018). Lacking associated settlement sites, these cemeteries have been interpreted as belonging to pastoral nomadic groups, moving in seasonal patterns with their flocks of animals (Henrickson 1985a). Alizadeh (2008: 16–18) suggests that the diversity of pottery styles indicates the movement of "dowries" of goods brought into the region through transregional marriages between nomadic and settled groups. The Middle Chalcolithic III phase, *c.* 4200–3800 BC, is less well represented in Luristan, apart from Chigha Sabz (van Loon 1989c, 1989d), but black-on-red wares show connections with Susa A material to the south (Henrickson 1985b), and there are several Middle Chalcolithic settlement sites in the Khorramabad Valley to the east (Hole 2007: 73).

The Late Chalcolithic, 3800–3200 BC

Periods VII and VI at Godin Tepe are the key archaeological contexts for the Late Chalcolithic of the central Zagros (Rothman and Badler 2011; Moghaddam and Javanmardzadeh 2013: 100). Godin VII red-slipped pottery occurs in Luristan and Kurdistan and has some parallels at Ghabrestan on the Qazvin plain (Majidzadeh 1978) but we have little in the way of architecture from Godin in this period (Rothman and Badler 2011). Excavations at the nearby site of **Seh Gabi** exposed a suite of thick-walled rooms with cruciform hearths, eight infant burials under house floors, and much evidence for craft production, including ceramics, chipped stone, textiles and metal-working (Hole 1987b: 50; Rothman and Badler 2011) (Figure 6.30). Seals and sealings with seal impressions suggest the involvement of this small village in wider patterns of socio-economic engagement in the Godin VII period (Hamlin 1974; Henrickson 1988; Rothman and Badler 2011: 80).

Godin VII is a critical period in the central Zagros of Iran. The recently excavated sites of Tepe Gheshlagh, Tepe Karvansara, Soha Chai Tepe and Tepe Kalanan add important new information to our understanding of Godin VII (Mucheshi *et al.* 2011; Alibaigi *et al.* 2014; Rahimi Sorkhani *et al.* 2017; Sharifi and Motarjem 2018). Recent settlement surveys in the central Zagros suggest a major population increase during the Godin VII period (Mucheshi *et al.* 2013; Zamani Dadaneh *et al.* 2019a). Sharifi and Motarjem (2018) refer to obvious similarities between the pottery tradition in layer III at Tepe Gheshlagh and the Godin VII phase. All of these sites are located in regions favourable for dry farming with adjacent plains suitable for grazing of animals. **Tepe Gheshlagh** has rectangular houses, ovens, kitchens and the other elements indicative of permanent settlement. Administrative artefacts at Tepe Gheshlagh include stamp seals and tokens. **Tepe Karvansara** is a small site but with evidence of craft activities such as metal production (moulds and copper tools) and ceramic kilns. Seal and seals impressions and tokens reveal administrative activity at the site. Furthermore, traces of Godin VII ceramics such as Plum Ware are attested on the Qazvin plain at sites such as Ghabrestan and Ozbaki and at Tepe Pardis on the Tehran plain, showing interconnections between the central Zagros and north-central Iran (Fazeli Nashli *et al.* 2021).

Fourth millennium BC materials were also excavated at the central Zagros sites of **Baba Jan** (Goff 1971) and **Tepe Giyan**, where glyptic evidence shows links across the Zagros to the piedmont of northern Iraq at sites such as Tepe Gawra (Contenau and Ghirshman 1935; Caldwell 1976). Ample Chalcolithic remains occur at sites such as **Chigha Sabz** and **Kamtarlan** in Luristan, including cylinder seals of Late Uruk-Jemdet Nasr geometric styles (van Loon 1989a, 1989c, 1989d). As Goff (1971: 145) commented,

> Many of the Lūristān sites are large by Persian standards, suggesting that here, as in Iraq, villages were turning into towns. Each of the large plains in Western Lūristān – Tarhan, Kūh-i Dasht, and Rumishgān – are dominated by one or more major tepes of this period.

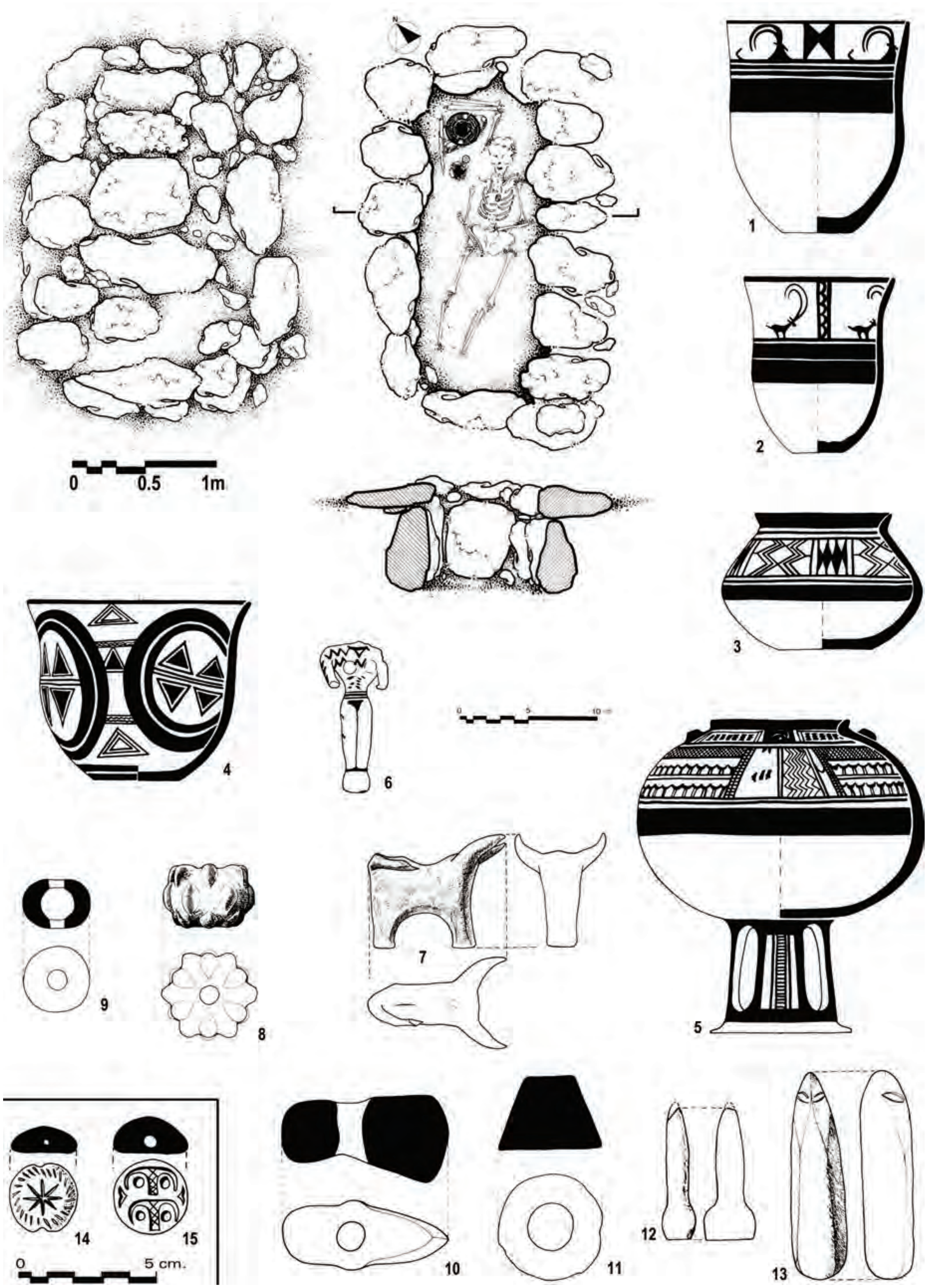

Figure 6.29 Dum Gar-e Parchineh, Tomb 72 and selected grave goods (Haerinck and Overlaet 2002: Figure 2) (images courtesy of Bruno Overlaet).

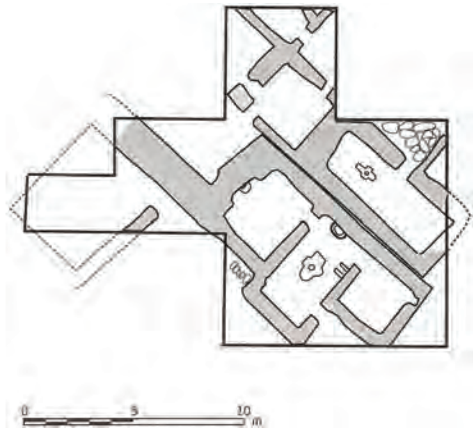

Figure 6.30 Seh Gabi, plan of excavated architecture (after Rothman and Badler 2011: Figure 4.7).

It is likely that these sites were keyed into transregional networks of communication and exchange that connected lowland-highland communities of the Late Chalcolithic.

In the Khorramabad valley, Late Chalcolithic occupation occurs in caves such as **Kunji** and **Ghamari**, where there are stone enclosures perhaps for animal penning, and ceramics, including bevelled-rim bowls and spouted vessels, showing Lower Mesopotamian and Deh Luran connections (Hole 2007: 73–74). It is likely that these intrusive Middle Uruk ceramics were picked up by groups moving seasonally from lowlands to highlands. Significant quantities of Uruk ceramics have also been found on sites in the Pol-e Dokhtar region directly west of Khorramabad, attesting networks of east-west communication around the mid-fourth millennium BC (Abbasnejad Seresti and Rezaei 2018). In the Hulailan region no sites of mid-fourth through early third millennia BC have been found (Mortensen 1975), a pattern that fits with a major hiatus in settlement across much of Luristan and beyond from *c.* 3500 to 2800 BC (Hole 2007: 75), possibly as a result of a drain of rural populations to thriving settlements of the plains (Haerinck 2011: 59). Well to the northwest of Godin Tepe, significant finds of Uruk-style ceramics at the site of **Sar Qala** west of Sanandaj in the high Zagros likely indicate east-west connections via the Shahrizor plain in Iraqi Kurdistan (Mucheshi *et al.* 2013).

At **Godin Tepe** itself (Figures 6.31–6.32), the major site of the Kangavar valley (Gopnik and Rothman 2011; Rothman 2013), there is an extensive exposure of architecture in level VI:1 (note that this level was previously labelled level V by the excavator Cuyler Young – see Rothman 2013: 79) dated to the last third of the fourth millennium BC (Rothman and Badler 2011: Table 4.2; Matthews 2013). The architecture and material finds of Godin VI:1 indicate strong connections with Late Uruk/Late Susa II material culture of Khuzestan and Lower Mesopotamia, and the site has featured prominently in debates over the nature of the so-called "Uruk expansion" of the later fourth millennium BC (Weiss and Young 1975; Algaze 1993).

Figure 6.31 Godin Tepe, view of site (photo credit: Roger Matthews).

Figure 6.32 Godin Tepe, level VI:1 Oval Enclosure in 2007, *ca.* 45 years after excavation (photo credit: Roger Matthews).

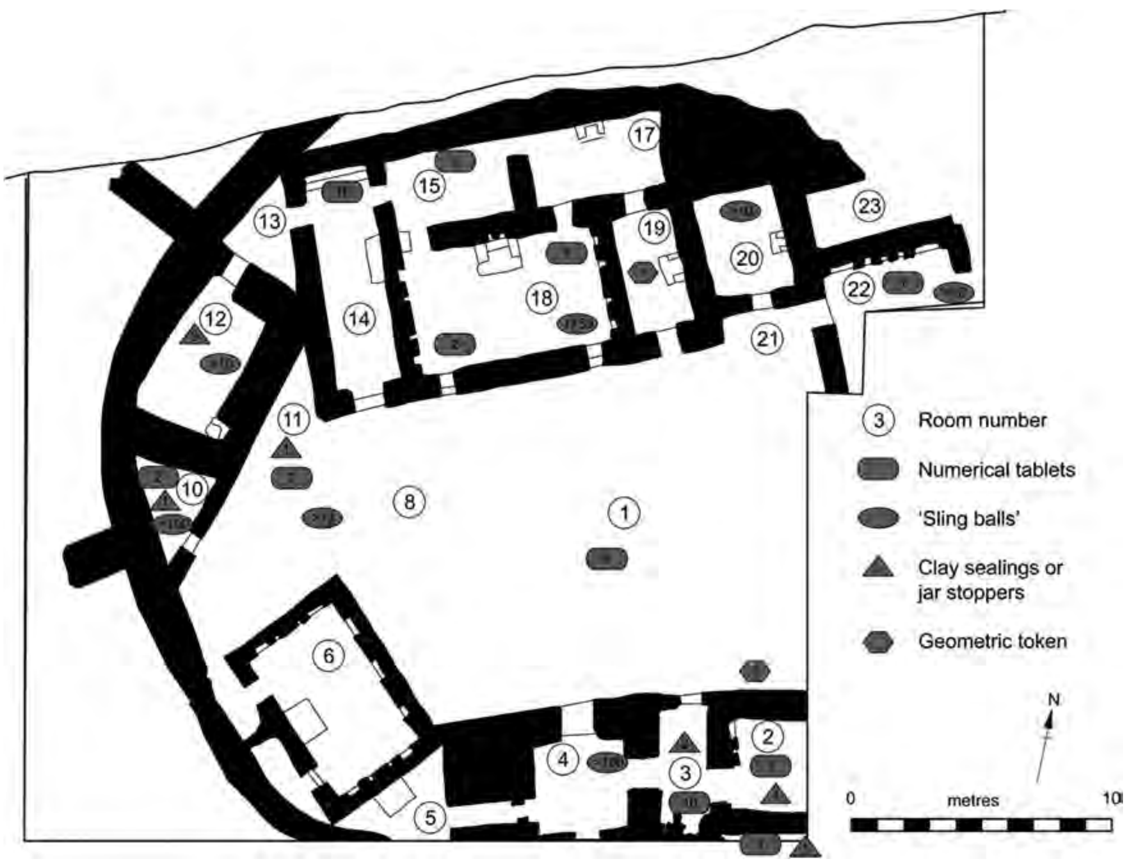

Figure 6.33 Godin Tepe, level VI:1 Oval Enclosure (after Matthews 2013: Figure 17.4).

The location of Godin on a major pass across the Zagros mountains and onto the Iranian plateau gives the site enduring strategic value, in particular with regard to control from the south via the Diyala valley, over access to the rich metal and semi-precious stone resources of the highlands. Godin VI:1 is marked by the construction of an Oval Enclosure on the upper mound (Figure 6.33). The main phase of the Oval Enclosure comprises a series of courts and formally arrayed rooms across an area about 33 × 25 m, with a single access through the main enclosure wall (Rothman 2013: Figure 5.4). Rooms 14–20 form a monumental building with niches in room 18, which has a fireplace in the centre of one wall face, flanked by two doorways. As Pittman (1994: 90) first pointed out (see also Desset 2014a), this architectural layout has good parallels in Proto-Elamite buildings at Susa

Acropole I 16–15B and Tal-i Malyan in Fars (Chapter 7). Jars with grape residue and clay stoppers suggest the storage of wine within this compound, and wine may have been a major commodity for export from the highland to the lowland zone (Badler 1995, 2000; McGovern 2007: 40–63). Other rooms in the complex contain evidence for storage of legumes and grains (Miller 2011), as well as for craft activity, food preparation and rubbish disposal (Rothman 2013). Charred roof beams indicate at least partial destruction by fire. Numerous intact vessels and other artefacts were found within the buildings (Rothman and Badler 2011: Figures 4.22–4.24), and walls were preserved to a considerable height with plastered faces in good condition, all suggestive of "a rapid departure of the inhabitants rather than gradual abandonment and slow decay" (Weiss and Young 1975: 3).

Pottery of Godin VI:1 has some local elements but also a significant proportion, up to 30%, of vessels with strong parallels to Uruk/Late Susa II pottery from Lower Mesopotamia and Susiana, including bevelled-rim bowls, droop spouts and four-lugged jars (Badler 1995, 2002; Rothman and Badler 2011). Helwing (2011a: 216, 2013a) suggests a Middle Uruk dating for much of the Godin VI:1 ceramics, tenuously supported by recalibration of old radiocarbon dates (Wright and Rupley 2001: 96). Painted pottery, until then a major feature of the Godin assemblages, more or less disappears in level VI:1, replaced by undecorated vessels made on the fast wheel often with string-cut bases, suggestive of mass production. Analysis of the clays indicates that almost all the pottery of Godin VI:1, including the Uruk-style vessels, was locally made but that some types may have been imported from local highland sites (Blackman 2011: 112; Gopnik *et al.* 2016). A few vessels, including a four-lugged jar, may have been imported from the Susiana plain. In contrast to the changing nature of much of the pottery assemblage, the chipped stone tools of the Oval Enclosure phase sit very much within the pre-existing lithic traditions of Godin, suggesting continuity in local practice of agriculture and other activities (Edens 2002).

Most notable amongst the level VI:1 finds are various material elements of administrative bureaucracy, comprising clay sealings with cylinder seal impressions, geometric clay tokens, so-called "sling balls" of clay, and numerical tablets (Rothman and Badler 2011: Table 17.1; Figure 4.24; Matthews 2013: Figure 17.4). The contextual distribution of these finds (Figure 6.33) reveals clustering of tablets and tokens at the entrance to the compound and in a clay bin close to a storage area in room 14 at the back of the main building. The provenance of many of the tablets in these liminal zones indicates that they may relate to interactions between people working and living in the Oval Enclosure and people living outside the Oval. The interactions accounted for in the tablets, and the clay sealings, are likely to involve control over movements of herds of animals and specific commodities such as dairy products, grain and oils into and out from the Oval.

The 43 tablets from Godin VI:1 are almost exclusively numerical tablets, with the sexagesimal and ŠE grain capacity systems probably attested. A single Godin VI:1 tablet, T295 from room 18 (Figure 6.34), displays one ideographic sign, DUG_b, representing a large ceramic vessel, in addition to number signs, in all accounting for 33 jars of dairy product over a period of one year (Englund 1998: 159; Matthews 2013: 346). This single numero-ideographic tablet ties Godin VI:1 closely to level 17A of the Susa Acropole I sounding, which is the very last level with Uruk/Late Susa II connections, immediately prior to the switch at Susa to so-called Proto-Elamite material culture (see below for more on Susa, and Chapter 7 for Proto-Elamite Susa). In level 17A of Susa Acropole I, numero-ideographic tablets similar to the Godin VI:1 example were found and they enable us to date Godin VI:1 to 3300–3200 BC (Englund 2004: 122), a suggestion that agrees well with the range of 3350–3140 BC

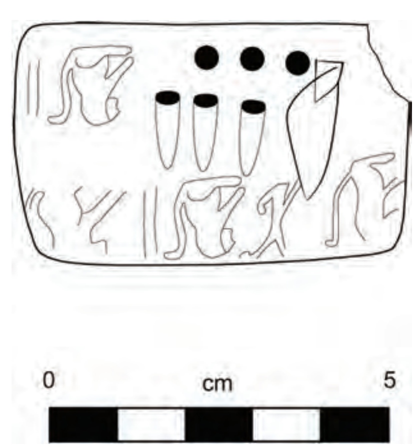

Figure 6.34 Godin Tepe, level VI:1 tablet T295 from room 18 (after Matthews 2013: Figure 17.4).

proposed by Robert Dyson (1987: 666) on the basis of five available radiocarbon dates from the Godin Oval Enclosure. The Godin VI:1 texts appear to relate solely to the management of the local rural economy by an elite group resident in the Oval Enclosure. Animal bones from Godin VI:1 come mainly from the Brick Kiln Cut trench where domestic buildings were excavated (Rothman and Badler 2011: 107–109). The bones indicate a strong reliance on goat and sheep with some use of cows and pigs as well as hunting of deer. Goat and sheep were mainly kept for meat but with some evidence for wool production too.

The seal evidence from Godin VI:1 has been characterised as "closely comparable to ones found either at Uruk or Susa in levels that can be dated to level 17 of the Acropolis sounding…in fact so similar that they must have been made in the same workshop" (Pittman 2011: 114), a cogent indication of the Uruk/Late Susa II connections of Godin in this period. Seal impressions at Godin VI:1 occur on 12 of the 43 tablets, as well as on clay sealings, while the only cylinder seal from the Oval Enclosure is in an early Proto-Elamite style (Chapter 7). Pittman (2013b: 329) has argued that the glyptic evidence and "arguably the entire administrative assemblage from Godin Tepe can best be situated within the emerging tradition of the Proto-Elamite" but, as Dahl *et al.* (2013: 354) point out, the Godin VI:1 tablets are all Uruk-style *not* Proto-Elamite and, as Helwing (2011a: 216) stresses, the ceramic connections of Godin VI:1 suggest a dating "several centuries" before the Proto-Elamite horizon. Furthermore, the depiction of a human figure, a kneeling archer on tablet Gd 73–320, which is closely paralleled in seal impressions on Susa numerical tablets and on a seal from Nineveh (Pittman 2011: 114), does not sit well within the Proto-Elamite iconographic repertoire, which eschews representation of the human form (Chapter 7).

Harvey Weiss and Cuyler Young interpreted the Oval Enclosure at Godin VI:1 as a trading colony founded by merchants from Susa, Sumer or the Diyala region probably with an interest in securing transport of materials such as lapis lazuli from the east to the lowlands to the southwest (Weiss and Young 1975; Young 1986b). We interpret the material evidence for bureaucracy at Godin VI:1 as indicating the presence at the site of a cadre of Uruk- or Susa-origin administrators, familiar with complex counting systems, who organised the construction of a defensible enclosure and carried out the administration of the local economy while attempting to protect the routes by which valued commodities were being transported (Matthews 2013). An argument for the presence of an Uruk outpost at Godin Tepe, coordinated with others at strategic locations such as Tepe Sialk near Kashan (see above), has been most cogently made in the world systems approach employed by Guillermo Algaze (1993: 53–56), who sees the outposts' role as critical in Uruk-driven desire for trade and exchange in valued highland raw materials such as timber, metals, precious and semi-precious stones and perhaps wine as well (Algaze 1993: Table 3, 2008: 95). Fundamental to his interpretation is an understanding of local participation in these processes:

> The survival of outposts such as Godin and Sialk implies that the highland communities in the midst of which they were located were amenable to participation in a wider exchange network tying into the alluvial lowlands of southern Iraq and Khuzestan.
>
> (Algaze 1993: 63)

Rothman and Badler (2011: 119) make a similar point regarding the collaboration of locally situated elites with external powers in a mutually beneficial enterprise of regional exploitation and administration. Historical examples of indigenous buy-in to external-origin exploitative projects are of course legion.

It is important to note that Godin sits at the top of a hierarchy of many contemporary sites in the Kangavar valley in the mid-later fourth millennium BC, suggestive of population increase and perhaps also the introduction of irrigation agriculture at this time (Young 2004: 652–653; Rothman and Badler 2011: 110–111; Balmaki *et al.* 2013). Godin's central location and its evidence for economic administration demonstrate its key role as a node of control, storage and redistribution of regional agricultural wealth in the form of grain, animals and animal products, arguably over considerable distances of the Kangavar valley. In concert with its agricultural power, Godin was also a regional centre as regards craft production in beads, pottery and metal-working, perhaps also in wine and beer. Its central role in the economy of the region is likely to have developed over the centuries of the Chalcolithic period prior to period VI:1. Uruk or Susa colonists or traders from the south will doubtless have had good knowledge of Godin's regional status prior to setting up their base on the summit of the mound and assuming control of an already well-developed regional centre. It is likely that the large site of **Chogha Gavaneh** on the Islamabad plain on the western side of the Zagros served a similar function at the western end of the same route (Figure 6.35) (Abdi 1999, 2003b: 424).

Virginia Badler (2002) has argued that the mix of Mesopotamian-style and local ceramics, the latter principally cooking wares, taken in concert with the use of local, non-Mesopotamian, spindle whorls, indicates a gendered presence at Godin VI:1 of men from Mesopotamia (whether from Uruk, Susa or the Diyala), living alongside local women who are cooking for, spinning for, and doubtless marrying the incomers. Analysis of the chipped

Figure 6.35 Chogha Gavaneh, exposed section face (photo credit: Roger Matthews).

stone assemblages from Godin supports the idea of "a small number of foreigners with a large local staff" (Edens 2002: 41). This situation contrasts with that pertaining at other sites impacted by the "Uruk expansion," such as Hacınebi Tepe in south-eastern Turkey, where two contemporary but differing sets of ceramic inventories, including cooking wares, have been distinguished in the Uruk phase, suggesting that "local" and "colonial" families maintained their respective ethnic identities through decades of cohabitation (Pearce 1999). A third scenario may be where colonial males adopt local material culture in its entirety, marrying local women and blending into the local environment, as may have been the case with the Old Assyrian merchants at Kültepe-Kanesh in the Middle Bronze Age of Anatolia and Upper Mesopotamia (Veenhof 1995).

That this brief experiment in colonial control at Godin, however directly implemented, ended in collapse is vividly illustrated by the partial burning and sudden abandonment of the Oval Enclosure and its replacement by a totally alien intrusion from the north in the overlying layers at Godin in level IV, the so-called Early Transcaucasian Culture (Young 1986b: 219; Rothman 2011: see Chapter 8). The end of Godin VI:1 is part of wider picture of regional disruption and site abandonment that can be traced across the Iranian highlands and Khuzestan, evident in the burning of Sialk III, the lack of settlement at Malyan and Yahya and at least partial, if short-lived, abandonment at Susa (Helwing 2013b: 88)

Social complexity and pastoral mobility

Overall, the Chalcolithic evidence from the central Zagros indicates a steady development towards increasing complexity over a period of almost two millennia. General trends include increased densities of settlement sites, and a probable decline in hunting and foraging coupled with a stronger emphasis on farming and animal herding – although we lack much detailed faunal and plant evidence with which to explore this issue (Hole 1987b). Basic settlement hierarchies are detectable in some regions such as the Mahidasht (Moghaddam and Javanmardzadeh 2013: 101). A debated issue concerning the Chalcolithic societies of the central Zagros is the possible development of pastoral nomadism as a distinctive mode of life, as arguably attested in archaeological sites identified through survey as "temporary campsites beyond the agricultural zone in the peripheries of the plain toward areas where one can expect to find pastures" (Abdi 2003b: 421, 2015b), as well as by the evidence for stylistic connections in ceramic assemblages spanning the border zones of western Iran and eastern Iraq (Sharp and Kaercher 2018). Excavations at **Tuwah Khoshkeh** on the Islamabad plain in the western central Zagros have shed light on one such possible campsite, with evidence for small-scale seasonal occupation probably by transhumant shepherds and their flocks, combined with hunting of wild deer and boar (Abdi *et al.* 2002b; Abdi 2003b: 428–429; Mashkour 2003; Mashkour and Abdi 2003). In support of this interpretation, Clare Goff (1971: 149) noted a transition in the Early Bronze Age from settlement on large mounds centrally located on the plains of Luristan to settlement along the fringes of valleys close to the mountains, more conveniently located for vertical transhumance with herds of goats and sheep.

There is, however, much debate about when and how true pastoral nomadism developed in Iran (Gilbert 1983; Henrickson 1985a; Abdi 2003b; Potts 2010b; Balatti 2017: 33–50; Arbuckle and Hammer 2019). According to Alizadeh (2008: 20), the Late Susiana I phase (see below; *c.* 4700–4500 BC) saw "the crystallization of mobile pastoralist mode of production in western and south-central Iran" and he included the Fars region of southern

Iran in this development (Alizadeh 1988, 1994, 2003b, 2004, 2006, 2010). Alizadeh's argument is that, while also providing wool and other animal products such as milk, cheese and yoghurt, mobile pastoralists fulfilled a key role as media for interregional contact and exchange, as attested in their wide-ranging repertoire of ceramics, at a time when settled elite groups in various regions of Iran and Mesopotamia were interested in securing access to cherished exotic commodities such as lapis lazuli, turquoise and copper, all of which are increasingly attested in the archaeological record from 5000 BC onwards.

In contrast to this scenario is Potts' (2010b, 2014) argument that the presence of true pastoral nomads in Iran cannot be indisputably demonstrated until they are mentioned by Herodotus and other ancient authors, at the earliest. The prehistoric archaeological evidence is too sparse, and too reliant on absence rather than presence of sites and attributes, to be decisive in this regard. Potts argues that it was the large-scale influx of Turkic-speaking nomadic groups from the eleventh century AD onwards that laid the foundations for the significance of pastoral nomadism within Iran in modern times, and he stresses that we need to be very cautious in "viewing nomadism as a timeless, eternal feature in Iran" (Potts 2010b: 18, 2014). A deep-time perspective on 10,000 years of pastoralism in Anatolia is similarly cautious, concluding that "long-distance sheep and goat mobile pastoralism, of the type practiced by some ethnographically studied groups and often projected into the deep past, appears to have been a historically late development in Anatolia" not securely attested until the eighth-tenth centuries AD (Hammer and Arbuckle 2017: 248).

While heeding these wise cautions, we may agree that much of the evidence cited in support of the early development of pastoral nomadism in Iran might equally relate to village-based herding within integrated agro-pastoral economies, whereby small groups of people take charge of flocks of sheep and goat on behalf of their co-villagers in movements to available pastures according to daily and seasonal dictates of environment, without engagement in full-time, long-distance pastoral nomadism (Arbuckle and Hammer 2019). Such an adaptable pattern of behaviour is identified by Niknami *et al.* (2017) on the basis of materials of Late Chalcolithic and Early Bronze Age date from Botkhane cave in Luristan, and has also been explored in depth through study of interconnected sedentary farmer/mobile pastoralist societies of Bronze Age southern Turkmenistan (Rouse and Cerasetti 2018).

A flexible view of the food acquisition strategies of Neolithic and later societies of Iran has been well put by John Alden:

> herding, agriculture, hunting, gathering and exchange have been elements in the subsistence economies of every group in the Middle East since the origins of domestication. Every group utilised each element, with the balance between the various modes of procurement shifting with the seasons, with short- and long-term variations in physical, cultural and political environments, and with cultural preferences. Archaeologists should be examining how ancient groups and societies balanced these elements and how those balances changed over time.
>
> (Alden 2015: 997)

Significant advances in isotopic analysis of animal and human remains, coupled with the generally excellent survival of bone collagen at archaeological sites on the Iranian plateau, compared to hotter and more humid regions of Southwest Asia (Bocherens *et al.* 2000), provide a promising avenue for future research into this critical issue.

Early state formation and the Chalcolithic societies of south-western Iran

South-western Iran has been described as "a bridge between the Mesopotamian alluvium and the mountain ranges and inner basins of Iran" (Wright 2013: 51), a place whose archaeological evidence enables us to approach issues of early state formation within a broad interregional context. The Khuzestan region of south-western Iran is especially well-researched for the Chalcolithic period. Multiple archaeological surveys and excavations have taken place across the plains and hillsides of Khuzestan since the origins of the discipline (see Chapter 3), and the region continues to host significant investigations (Kouchoukos and Hole 2003; Moghaddam 2012a, 2012b, 2013: 107–108). For the Chalcolithic period, key sites include Susa, Chogha Mish, Jaffarabad and Farukhabad plus input from many surveys of the region. The study of Chalcolithic societies of Khuzestan has focused on issues concerning early state formation as represented in evidence for settlement hierarchy, craft specialisation, mortuary practices and cult and religion (Adams 1962; Johnson 1973; Wright and Johnson 1975; Weiss 1977; Wright 1977, 1984, 1998; Berman 1987, 1994; Hole 1987a, 1987b, 2010; Pollock 1989; Hopper and Wilkinson 2013). A key factor in the interpretation of survey data from Khuzestan, and beyond, is the extent to which archaeological sites, particularly of prehistoric periods, are buried beneath recent sedimentation, which is highly variable across the plains of south-western Iran (Brookes *et al.* 1982; Kouchoukos 1998; Kouchoukos and Hole 2003; Moghaddam and Miri 2007; Hopper and Wilkinson 2013; Rashidian 2019).

As discussed in Chapter 2, Khuzestan is a distinctive region of Iran situated between, and with easy access to, the Zagros ranges to the north and east and the low-lying Mesopotamian plains to the west, with the waters of the Persian Gulf to the south. The fertile plains of Khuzestan, including the Mehran, Deh Luran, Susiana and Eastern plains (Moghaddam 2012b: map 1) were all created by tectonic uplift (Hamzehpour *et al.* 1999) and, because of their proximity to the Zagros range, they are capable of supporting farming both by natural precipitation and by irrigation (Heyvaert and Baeteman 2007; Walstra *et al.* 2010). Settlers on these plains had the benefit of ready access to a vast richness and variety of natural resources, including the marshlands of the south and west with their fish, water fowl and reeds, the hillsides, mountains and upland plains of the Zagros to the north and east with their high pastures and wild plant, animal and mineral resources, and the plains of central and south Mesopotamia with their extensive arable soils.

Critical to the context of human settlement of this region and adjacent Lower Mesopotamia to the west throughout the Chalcolithic was the shifting location of the head of the Persian Gulf (Wilkinson 2012: 19–20; Pournelle 2013). From the start of the Holocene at *c.* 9500 BC the marine transgression of the Persian Gulf proceeded at an alarming pace, an average of 140 m per year (Teller *et al.* 2000), rapidly displacing coastal dwelling communities who may then have contributed to ever denser populations in dry-land settlements further inland, a factor argued by Kennett and Kennett (2007) to be a major stimulus to early state development in the region. The work of Belgian researchers in Khuzestan suggests an initial rapid transgression at the start of the Holocene followed by stabilisation of sea level at *c.* 3500 BC leading to the generation of a resilient marshy, intertidal zone that has essentially persisted to today with minor fluctuations (Baeteman *et al.* 2004; Gasche 2007; Heyvaert and Baeteman 2007). It is now clear that the earliest development of complex societies from the Ubaid period onwards in Lower Mesopotamia and the adjacent Khuzestan lower plains took place within a deltaic environment of intertidal flats, marshes, lagoons, estuaries, and anastomosing and occasionally avulsing river courses, with settlements developing on Pleistocene "turtlebacks" standing proud of the surrounding waters (Pournelle 2007, 2013; Ur 2013).

Chronology

There are multiple chronological schemes pertinent to south-western Iran, based on excavations at the region's major sites as well as on regional surveys and broader interpretive frameworks (de Miroschedji 2003: Table 3.1; Alizadeh 2008: Table 1; Moghaddam 2012b: Table 1). For the prehistory of Khuzestan and western Iran more broadly, Frank Hole (1987b: 30–32) devised a scheme of "village periods," with the Initial Village Period covering the Neolithic, and the Early, Middle and Late Village Periods essentially covering the Chalcolithic. There is also the Susiana a–e scheme developed by Le Breton (1957) and Johnson (1973) to cover the Chalcolithic of the Susa plain, plus site-specific frameworks for Susa, Chogha Mish and other sites. For the Early Chalcolithic we here employ the "Early, Middle, Late Susiana" scheme widely applied across Khuzestan (Kouchoukos and Hole 2003: Table 5.2; Alizadeh 2008: Table 1; Moghaddam 2012a, 2012b: Table 1, 2013), while recognising the inclusive value of Mary Voigt's (1987: Figure 2), treatment of the Chalcolithic of Iran in six sequential stages. For the Late Chalcolithic we employ the Susa II scheme, as discussed below.

The Early Susiana period, 5700–5400 BC

The earliest Chalcolithic of Khuzestan sees major socio-economic developments, including the expansion of Chogha Mish on the Susiana plain to some 5 ha, alongside the foundation of sites such as Jaffarabad on the western plains (Alizadeh 2008: 10). Evidence for settlement on the Eastern Plains beyond the Karun River prior to *c.* 5100 BC is, however, sparse (Moghaddam and Miri 2007). Survey on the Deh Luran plain located multiple small villages of the so-called Sabz phase, and there are indications of both rain-fed and irrigated agriculture (Adams 1962: 112; Helbaek 1969: 412; Neely and Wright 1994: 166). A distinctive attribute of the pottery of this phase is the use of potters' marks on the base of a specific type of vessel, perhaps to enable identification of batches of vessels being fired in communal kilns (Alizadeh 2008: 10, Figure 64). More broadly, the ceramics of Early Chalcolithic Khuzestan show much continuity with preceding Late Neolithic wares as well as many similarities with Ubaid 0 and 1 assemblages of Lower Mesopotamia, as excavated at Tell el-'Oueili (Alizadeh 2008; Moghaddam 2013).

New types of stone tools, including crescentic hoes and polished celts, hafted with locally occurring bitumen, may well indicate increased agricultural activity at this time, in association with irrigation (Hole *et al.* 1969: 356;

Alizadeh 2008: 10). As to architecture, in Trench XXI at **Chogha Mish** we have an extensive plan of mudbrick buildings (Figure 6.36), including three multi-roomed structures, with fireplaces, interpreted by Alizadeh (2008: 11) as "residences of extended or chiefly families." There is also evidence for supra-domestic structures, including ranges of long, narrow rooms, perhaps for storage, and a low mudbrick platform in a large open area that may have functioned as a loading-dock connected with nearby storage facilities (Alizadeh 2008: Figure 14). A provisional interpretation of the Early Susiana architecture at Chogha Mish thus suggests that we have residences of well-to-do individuals who were concerned with receipt, storage and perhaps also distribution of certain unknown commodities. Finds of *in situ* storage vessels associated with "large quantities of carbon" (Delougaz *et al.* 1996: 163) may indicate that storage and distribution of foodstuffs was a component of these activities. Common finds of clay tokens, mainly cones, discs and spheres (Alizadeh 2008: 77–78), support this interpretation. On the Mehran plain in Ilam province, close to the border with Iraq, the multi-period site of **Chogha Ahovan** appears to be occupied from this period and through subsequent millennia of the Chalcolithic (Javanmardzadeh *et al.* 2013; Khazaee *et al.* 2014), and is clearly a settlement of major importance at this time.

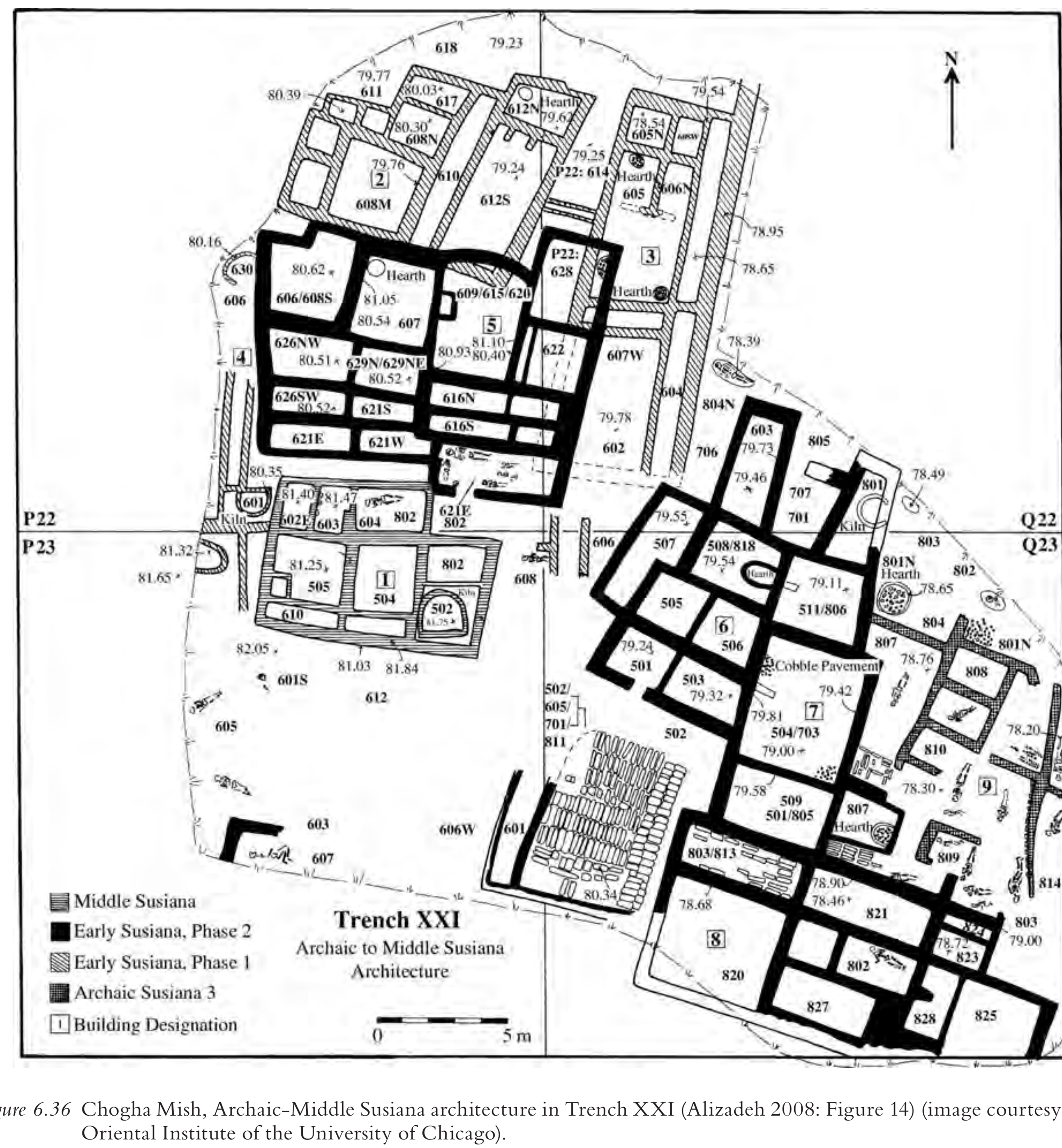

Figure 6.36 Chogha Mish, Archaic-Middle Susiana architecture in Trench XXI (Alizadeh 2008: Figure 14) (image courtesy of the Oriental Institute of the University of Chicago).

The Middle Susiana period, 5400–4600 BC

There is good evidence for a substantial increase in sites and population in Khuzestan in the Middle Susiana phase, with increasing dominance of the region by the site of Chogha Mish (Alizadeh 2008: 11–13; Moghaddam 2013: 110). Across the plains of south-western Iran we see a similar pattern of increased site hierarchy and generally increased numbers of sites (Hole 1987b: 40; Kouchoukos and Hole 2003: 56; Hopper and Wilkinson 2013: Figure 3.5), including on the Eastern Plains region between the Karun river and the Ram Hormuz plain (Moghaddam and Miri 2007; Moghaddam 2012b: 65). Even on the Deh Luran plain, a slight reduction in occupied sites from the Khazineh through Mehmeh to Bayat phases is at the expense of increased growth at a few major sites such as Tepe Sabz, Musiyan and Farukhabad (Hole 1987a: 84).

The site of **Chogha Mish** rises to real prominence in this period, reaching 15 ha in occupied area by the Late Middle Susiana phase (Delougaz *et al.* 1996: 284). In the Early Middle Susiana phase there are strong ceramic connections with Lower Mesopotamia in the Ubaid 2 phase, as attested at Eridu levels XII–IX, while in the Late Middle Susiana phase the ceramics in particular show more highland connections (Figure 6.37) (Alizadeh 2008: 11; Mutin 2012: 162–163). In the Early Middle Susiana phase at Chogha Mish, the architecture is similar to that of the preceding Early Susiana phase, with multi-roomed houses built of mudbricks (Alizadeh 2008: 12; Figure 14). A major shift in gear is attested in the Late Middle Susiana phase, from *c.* 5000 BC, most vividly by the construction of a massive monumental building at least 20 x 20 m in area (Figure 6.38) (Alizadeh 2008: 42, Figure 15, pls. 10–11). This structure, only half excavated, consists of parallel ranges of long rooms defined by substantial plastered mud-brick walls excavated to a height of 1.5 m. Its destruction by fire had preserved organic materials used in roofing, including timbers and reeds. Many of the rooms were full of intact contents, including complete pottery vessels, clay "sling-shots" and considerable evidence for *in situ* production of chipped stone tools.

The purpose of this impressive building, with its multiple recessed doorways and buttressed exterior facades, is obscure. Alizadeh (2004, 2008: 13) proposes to view the building as a chiefly residence, analogous to the White Room at Tepe Gawra level XII identified as such by Flannery (1998), and he sees its destruction as an outcome of

Figure 6.37 Chogha Mish, Middle Susiana painted pottery (Alizadeh 2008: Figure 40) (image courtesy of the Oriental Institute of the University of Chicago).

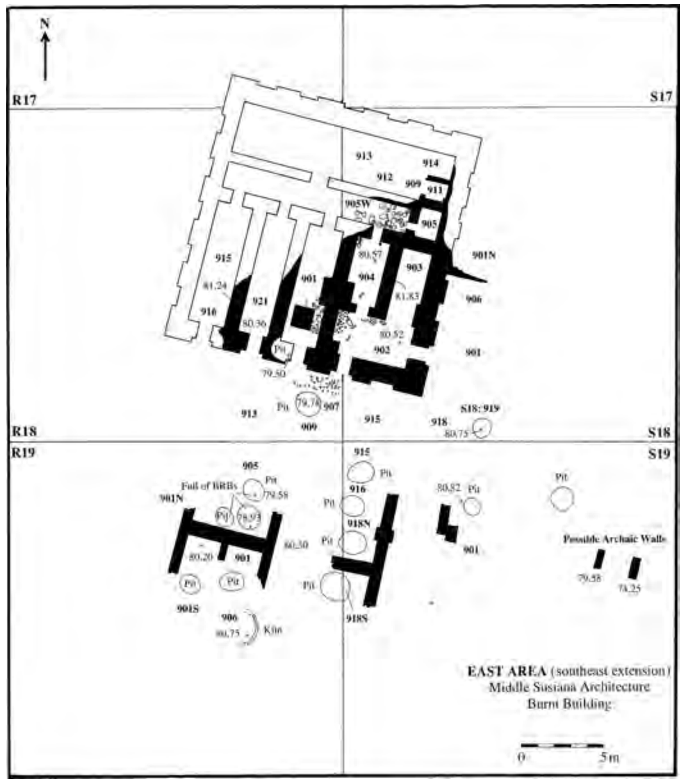

Figure 6.38 Chogha Mish, Late Middle Susiana architecture in East Area (Alizadeh 2008: Figure 15) (image courtesy of the Oriental Institute of the University of Chicago).

aggressive tension between the inhabitants of Chogha Mish and increasingly active groups of "highland mobile pastoralist communities who may have been vying with the Chogha Mish elite to control the eastern Susiana plain" (Alizadeh 2008: 13). Frank Hole (1992) associates the Chogha Mish destruction with social tension across the region brought about by an environmental downturn during the later fifth millennium BC, which may also have increased the power of mobile components of society such as pastoral nomads. Contrary to Alizadeh's interpretation of the Chogha Mish monumental building, we point out that it bears little resemblance to the White Room complex at Gawra XII (Rothman 2009: 23, 37), which is situated in an organic mix of mudbrick residences at the edge of the mound and lacks the architectural elaboration of formal layout, niched facade and recessed doorways that characterise the Chogha Mish structure. These attributes speak more of planned religious architecture (Margueron 2009). In any case, the Chogha Mish building clearly represents a major investment of skill, time and labour by the community at Chogha Mish, to a degree unparalleled by any previous building attested at Chogha Mish or indeed anywhere else in Iran prior to this time. The voluminous evidence for chipped stone production within the building, at least, is striking evidence both for intensification of craft specialisation and for control over that production by a powerful authority of some kind. It is also remarkable that following the destruction of this building, the site of Chogha Mish and several of its satellite villages were abandoned (Alizadeh 2008: 13).

At the same time as the construction of the Chogha Mish monumental building, there appears to be a shift in human burial practices. In the Early Middle Susiana phase at Chogha Mish, human burials were made under house floors and in open spaces, as in previous periods at the site (Alizadeh 2008: 12), but from the Late Middle Susiana phase this practice appears to stop and it is no longer clear how the dead were being disposed of, although off-site cemeteries have been proposed but not located (Hole 1987a: 88). At least one of the Middle Susiana burials from Chogha Mish shows clear traces of artificial cranial modification through cloth binding, a practice originating in the Neolithic in this region (Chapter 5; Ortner 1996; Daems and Croucher 2007: 7). Figurines of human heads from Early Susiana levels at Chogha Mish also appear to depict cranial modification. Contemporary burials at **Tepe Sabz** show slight evidence for differentiation in their grave goods (Hole *et al.* 1969: 363).

As to subsistence at Chogha Mish and beyond in the Middle Susiana period, prime plant foods were wheat, six-row barley and lentils (Alizadeh 2008: 12) with some evidence for a shift from wheat to barley by the end of the period (Miller 1977: 51). Goat and sheep were the main herding animals, along with cattle, and there seems to have been a steady decline in hunting, of onager and gazelle, through the course of the period, as well as an increase in herding of sheep as against goat (Alizadeh 2008: 12, 19; Moghaddam 2013: 110). Hole and Flannery (1968: 181; Hole *et al.* 1969: 361) associate the extensive use of irrigation and of recently domesticated cattle as key components in the emergence of social complexity during this period on the Deh Luran plain.

The site of **Jaffarabad** on the Susiana plain seems to have been a specialised ceramic production site (Hole 1987a: 86), with evidence for standardisation of production of fine painted vessels, and strong connections in ceramic types across a broad region of southern and north-eastern Mesopotamia (Hole *et al.* 1969: 365). Architecture at Jaffarabad is well-planned, consisting of multi-roomed residences with storage facilities, three infant/child burials, and much evidence for use of stamp seals (Figure 6.39) (Dollfus 1977, 1978, 1983b). Similar buildings as well as storage vessels with distinctive potters' marks were encountered at the nearby site of **Jowi** (Dollfus 1983a) and from **Bendebal** there are domestic houses with kilns and more burials of children only (Dollfus 1983b, 1983c). We have already mentioned the Chogha Mish evidence for specialisation in chipped stone tool production. It has also been proposed that the large site of **Tall-e Abu Chizan**, almost 8 ha in extent, was located for specialist extraction of locally available bitumen as well as for large-scale craft production in the form of ceramics and chipped stone (Moghaddam and Miri 2007; Connan *et al.* 2008; Moghaddam 2012a: 138, 2012b: 529–530). The full range of domesticated animals (sheep/goat above all) and plants, as well as selected wild species, were exploited by the site's inhabitants (Mashkour and Mohaseb 2012; Tengberg 2012a). The appearance of clay jar sealings and cylindrical bead seals in the Bayat phase at Tepe Sabz, *c.* 4500 BC, also indicates an increased concern with marking and tracking of property or commodities (Hole *et al.* 1969: 365). Lower excavated levels of **Tall-e Geser** (= Tell-i Ghazir) on the Ram Hormuz plain appear to be contemporary with Late Middle Susiana (Caldwell 1968: 349; Alizadeh 2014: Table 1).

The Middle Susiana phase thus sees some major socio-political developments in Khuzestan, including the first monumental architecture, evidence for craft specialisation in pottery, chipped stone and possibly bitumen extraction (Schwartz and Hollander 2016), new mortuary practices and an intensification of the agricultural basis of society, with wheat, barley, sheep, goat and cattle forming the basis of food resources, as hunting steadily declined in significance. Taken in concert, these components can readily be interpreted as forming key stages in the formation of state-level societies.

The Late Susiana period, 4600–4000 BC

The processes of socio-political development we have discerned in the late sixth and early fifth millennia BC continue apace through the rest of the fifth millennium BC and beyond. The key event by the end of this period was the rise to dominance of the site of Susa, following the abandonment of Chogha Mish in the early fifth millennium BC. There was slight subsequent occupation at Chogha Mish in the Late Susiana phase, with evidence for pottery production, but not comparable in scale to that of the Middle Susiana phase. A 50 x 50 m mudbrick

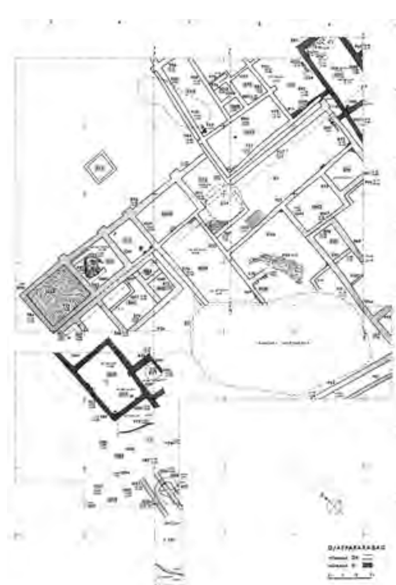

Figure 6.39 Jaffarabad, architecture of levels 5b and 6 (after Dollfus 1978: Figure 4).

platform, surmounted by an even larger platform, has been revealed at the site of **Chogha Do Sar**, 8 km south-west of Chogha Mish, which suggests that Chogha Do Sar may have supplanted Chogha Mish as the key regional centre for a short time in the fourth millennium BC but we know little more about this site (Alizadeh 2008: 15).

One of the most important places in the archaeology of Iran and Southwest Asia, and a UNESCO World Heritage site since 2015, the site of **Susa**, biblical Shushan, is situated in a transitional zone between the Lower Mesopotamian plains to the west and the Zagros highlands to the north and east (Figure 6.40) (see Chapter 3 for a history of excavations at Susa; Harper *et al.* 1992 for excellent overviews). This liminal location is a key factor in shaping Susa's cultural connections through the centuries (Le Breton 1957; Amiet 1979b, 1979c, 1992), with low-land and highland components competing for domination in the material culture and in the political and economic spheres within which the material culture was produced and consumed. The earliest occupation at Susa, called Susa I, was originally identified in two soundings, Acropole I levels 27-24 and Acropole II levels 11–7 (Moghaddam 2013: 112), as well as at the base of the Apadana mound, spanning from *c.* 4350 to 3800 BC (Weiss 1977; Hole 1983: 317; Alizadeh 2008: 22). Recent investigations adjacent to the *massif funéraire*, however, have exposed layers of earlier date, suggesting a foundation of Susa by Late Middle Susiana, *ca.* 4700 BC, arguably pre-dating the abandonment of Chogha Mish at *ca.* 4600 BC (Figure 6.41) (Ahmadzadeh *et al.* 2021). Even earlier levels remain to be excavated.

One of the earliest buildings excavated at Susa is the Susa I Building on the Apadana mound (Steve and Gasche 1990; Potts 1999: 46–47). The Apadana mound appears to have been surrounded by a wall of *chineh* some 6 m thick, and the Susa I Building has pink-plastered walls, also of *chineh*, over 2 m thick. Steve and Gasche (1990: 22) interpret this building as a chief's residence, a secular complement to the contemporary cultic structures on the Acropole. As this building stands atop some 2.5 m of archaeological deposits, there clearly must have been even earlier settlement at Susa, about which we know very little.

Susa rapidly replaced Chogha Mish as the major site of Susiana, retaining this position for several millennia apart from a short time at the end of the fourth millennium BC, the so-called Protoliterate period (see below). Susa was clearly of supreme cultic and political significance, with a monumental mudbrick platform, the *haute terrasse*, rising in a series of steps up to perhaps 20 m above the plain and with a surface area of *c.* 70 × 65 m (Figure 6.41) (Steve and Gasche 1971, 1990; Canal 1978b, 1978a). The scale of this structure was truly immense: Frank Hole (2010: 238) has pointed out that the bricks used in its construction could cover 5.5 ha to a depth of 1 m. Inlaid ceramic cones (also found at Jaffarabad) and clay models of goat horns were set in groups into the face of the upper stage of the platform (Canal 1978b: 173). The *haute terrasse* was constructed after the abandonment of a smaller platform, the *massif funéraire* (Potts 1999: 47; Alizadeh 2008: 16; Álvarez-Mon 2018c). These platforms would have been topped by cultic buildings, which have survived only as fragmentary plans (Steve and Gasche 1971, 1990; Canal 1978a; Pollock 1989; Hole 1992, 2010: Figure 15.5, 2011). Susa I buildings on the Acropole and the Apadana were all destroyed by fire at the end of this phase (Canal 1978a).

Close to the *massif funéraire* on its south side and partially cut into it, was a major cemetery of up to 2000 individuals, all dating to the centuries around 4000 BC (Figure 6.42) (Hole 1983, 1990, 1992, 2010). The excavators, de

Figure 6.40 Susa, overall plan of the site showing excavated areas (after Harper *et al.* 1992: Figure 3).

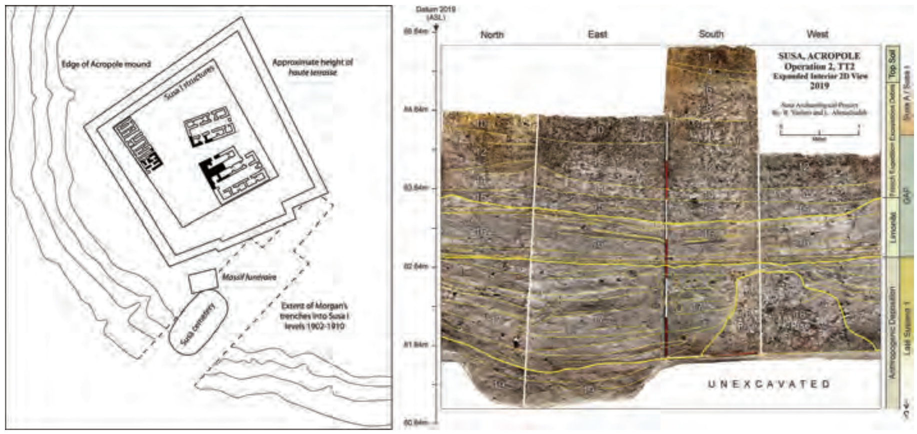

Figure 6.41 Left: Susa, plan of the Acropole mound at c. 4000 BC showing Susa I structures and cemetery (after Hole 1992: Figure 23). Right: Susa, section drawing of Operation 2 to show earliest excavated levels (Ahmadzadeh *et al*. 2021: Figure 8) (images courtesy of Ramin Yashmi and Loghman Ahmadzadeh).

Figure 6.42 Susa, reconstruction of a Susa I burial (after Hole 1992: Figure 24).

Morgan (1912) and de Mecquenem (1943), reported finding bodies and disarticulated bones densely stacked within the cemetery, but the widely accepted notion that many of the burials in the Susa I cemetery were secondary burials, deposited there after initial burial or exposure elsewhere, has been forcefully countered by Álvarez-Mon's (2018c) critical examination of the excavation records, demonstrating that the apparently disarticulated and fragmentary nature of the human remains relates to taphonomic factors rather than to secondary burial. Infants appear to have been buried elsewhere, perhaps to the north on the other side of the *massif funéraire*, where two child burials with pots were found (Hole 1983: 316). More recent excavations in this area by Perrot and Canal (Canal 1978b, 1978a) established that the *massif funéraire* suffered from two major episodes of burning and collapse before the major cemetery was in use. The collapsed material contained many disarticulated human bones, suggesting that on top of the *massif funéraire* there may have been a charnel house full of human bodies before the platform's collapse.

Most of the burials were accompanied by finely painted pottery, including serving sets of beaker, dish and jar interpreted by Susan Pollock as essentially prestige goods (Pollock 1983; Hole 1984; Álvarez-Mon 2020: 7–20). Judith Berman's (1987, 1994) neutron activation analysis suggests that the cemetery vessels were made at a range of nearby sites, not at a single production centre. Study of the decorative motifs and the skills required to produce them also supports the idea of multiple centres of production (Hole 1992: 29). These dispersed ceramic production centres may have been connected with the residential localities, or villages, of particular high-status individuals brought to Susa for burial in the cemetery (Berman 1994: 28). If so, then arguably at Susa we have an early case of a major religious centre acting as a focus for burial of individuals from a wide range of localities, a common practice in the region to this day, as exemplified at the great Shia shrines of Nejef and Kerbala in central Iraq, and which continues traditions of the eastern Fertile Crescent that reach far back into the eighth millennium BC of the Early Neolithic as attested at Bestansur in Iraqi Kurdistan (Matthews *et al*. 2019).

The painted motifs on the Susa I vessels, in particular the striking portrayals of wild goat with exquisite curving horns (Figure 6.43), demonstrate the highland relations of the Susa ceramics, at sites such as Tall-e Bakun, Tepe Giyan and Godin Tepe, as well as situating Susa within a trajectory of Iranian cultural engagement with wild goat that we can trace back for many millennia, at least as far as the Early Neolithic shrine at Sheikh-e Abad in the central Zagros with its skulls of massive male goats (Chapter 5). Hunting dogs of saluki or greyhound type, water birds, snakes and turtles are also depicted on the Susa I pots (Hole 1992: 32–41). One painted bowl (Figure 6.44) (Hole 1992: 33) has a rare depiction of an anthropomorphic figure standing between two triangular-headed standards. Triple parallel lines in front of the figure have been interpreted as representing irrigation canals, but they could rather portray in plan the stepped facade of a platform such as the nearby *massif funéraire*, with the anthropomorphic figure representing a high priest or a deity, or a statue thereof, situated on a projecting dais of

Figure 6.43 Susa I cemetery, ceramic vessel with painted motifs including wild goat with curving horns (Nokandeh 2017: Figure 23) (photo credit: Neda Hossein Tehrani and Nima Mohmmadi Fakoorzadeh, courtesy of the National Museum of Iran).

Figure 6.44 Susa I cemetery, ceramic vessel with anthropomorphic figure between standards (after Hole 1992: 33).

the platform and thus overseeing the cemetery below. The depiction of stylised vultures on the same bowl might then allude to excarnation of the dead prior to burial in the cemetery.

In addition to the painted pottery, many of the burials were accompanied by hammered copper axes and disks (Stech and Pigott 1986), which may have been used by priests in religious ceremonies (Hole 1983, 1992: 30). This interpretation is bolstered by the evidence from Susa I clay sealings with stamp seal impressions, which portray individuals wearing animal head-dresses and large disks suspended around their necks (Amiet 1972; Hole 1983; Aruz 1992: 45). Analysis of copper artefacts from Susa I contexts shows that they are composed of very pure copper with minor arsenic content, probably from Anarak sources on the plateau (Malfoy and Menu 1987: 365; Pigott 1999: 79). Finds of small vases of ceramic, stone and bitumen with metal mirrors have been speculatively associated with female burials (Hole 1992: 41).

Multiple clay sealings with stamp seal impressions of the Susa I period were found at Susa (Amiet 1972, 1973a,1986b; Aruz 1992; Pittman 2001a; Hole 2010; Piran 2013). Although not all their contexts were recorded, it seems that none of them were found in the cemetery. The scenes depicted on these stamp seal impressions, of which there are at least 260 different examples, give us vivid insights into the cultic life of Susa in its earliest centuries of settlement (Figure 6.45), showing "a range of activities and complexity that is unprecedented in the Near East" (Hole 2010: 237). They show high-status anthropomorphic figures engaged in a variety of activities, in some cases possibly deities or high priests wearing cultic garb and paraphernalia while conducting ceremonies under a glaring hot sun. Their head-dresses take the form of wild goat heads with massive horns or vultures with drooping beaks. Once more, these components align Susa I in a deep-time trajectory reaching back to the wild goat heads and large bird bones found at Early Holocene sites such as Zawi Chemi Shanidar and Sheikh-e Abad in the high Zagros (Chapter 5).

The Susa I clay sealings also inform us on systems of storage and administration. By examining the impressions on their reverse faces, we can see to which kind of objects the clay pieces had been affixed. The Susa I sealings were affixed to pot mouths covered with cloth, as well as to wooden pegs or knobs used to secure store-room doors (Amiet 1986b, 1988; Charvát 1988; Aruz 1992). The association of cultic activity with an administrative concern for storage and distribution is a persistent theme in ancient Iran and Mesopotamia, clearly to do with storage of offerings and tithes collected by the priesthood on behalf of their deity, but also a key feature of what has been called "the institutionalisation of religion" (Hole 1983: 315). It is notable that a range of probable store-rooms is situated on the top of the *haute terrasse* at Susa (Figure 6.41). In the case of the Susa I sealings, we cannot tell exactly what types of commodity were being stored in the containers and storerooms of the temple but analogy with later fourth and third millennia BC examples, where we sometimes have written evidence, suggests that a range of agricultural and animal produce as well as luxury items, would be involved.

As to the nature of society at Susa in the Susa I period, the seminal role of cult and religion can hardly be denied in view of the evidence discussed above. But was Susa I society egalitarian or headed by powerful leaders such as chiefs? Clearly there was the ability to mobilise large groups of labourers with a common purpose, attested in the construction of the *massif funéraire* and the *haute terrasse*, each of which would have demanded hundreds of thousands of labour-hours, but that does not necessarily imply an organising individual leader. The graves themselves

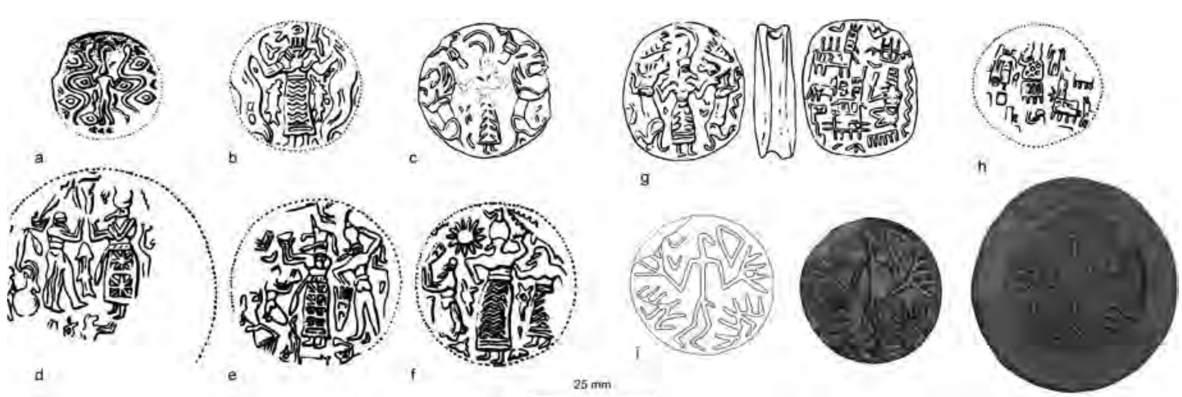

Figure 6.45 Susa I stamp seal and seal impressions (after Hole 2010: Figure 15.8e-l) plus stamp seal from Qara Tepe (bottom row, after Fazeli Nashli *et al.* 2021: Figure 3.1).

show only moderate evidence amongst the grave goods for social differentiation. Hole has thoughtfully addressed this problem, musing about societies composed of "semiautonomous modules…that could aggregate at times of mutual interest and dissolve at other times. The assumption of any particular role and status was situational" (Hole 1983: 325). He further proposes that Susa I society may have been headed by lineage or clan leaders who could assume positions of cultic authority for the purposes of specific festivals. An associated interpretation of the Susa I glyptic imagery has been propounded by Javier Álvarez-Mon (2020: 24): "Seen against the development of rational systems for the organization, securing and supervision of property, the imagery implies that the management of wealth made recourse to ritual."

The Susa I Building on the Apadana mound might then be viewed as a residence and administrative focus for the exercise of political and cultic authority, a system characterised by Gil Stein (2020: 180) as "elaborate but unstable and prone to periodic cycles of collapse." Hole (1992: 28, 2010: 228) further associates the social investment at this time in the construction of large-scale platforms and temples, as attested at Uruk and Eridu as well as at Susa, with an intensified religious sensibility of peoples undergoing social and political disruption in the face of significant environmental change. Similarly, he sees the destruction by fire of the Susa I buildings on the Acropole and the Apadana mound, and at other sites in Iran such as Tepe Sialk and Tall-e Bakun, coupled with evidence for regional abandonment in many areas, as resulting from social tensions due ultimately to environmental downturn in the later fifth millennium BC (Hole 1992, 2010). At the same time, increasing evidence through this period for use of items of personal adornment, including probable labrets and ear spools (Croucher 2010; Stein 2010: 30–31), as well as for the continued practice of head-shaping (Lorentz 2010), suggests a developing concern with personal identity.

On the Deh Luran plain, to the northwest of Susiana, the site of **Farukhabad** is especially significant in the Late Susiana period. Henry Wright's analyses of the site indicate some degree of social differentiation amongst the residential buildings at Farukhabad, with variability in socio-economic capabilities such as access to exotic raw materials, consumption of high-status painted ceramics and employment of elite iconography on stamp seals (Wright 1981; Wright *et al.* 1999; Moghaddam 2012a). The supply of bitumen from this region to Early Ubaid sites in Mesopotamia is also notable (Connan 1999), and it is further remarkable that a break in Iranian bitumen supply to Late Ubaid Mesopotamia coincides with a reorientation of Susiana ceramic connections in the later fifth millennium BC, with Zagros and highland links more to the fore than the pre-existing Mesopotamian lowland links (Le Breton 1957: 88; Alizadeh 2008; Moghaddam 2013: 113). The presence of Ubaid-related ceramics at a very few sites along the Iranian shores of the Persian Gulf such as **Halili** in Bushehr suggests the participation of small-scale sea-going communities in this episode of trans-regional engagement (Carter *et al.* 2006; Mutin 2012: 163–165). Stylistically, the Halili ceramics are of Ubaid 2 type, shown by archaeometric analysis to be a mix of locally made and imported from Mesopotamia.

At the same time there is a major realignment of settlement across Khuzestan at the turn of the fifth-fourth millennia BC, in the Terminal Susa A period, with Susa diminishing in size from 15 ha to perhaps 5 ha (Steve and Gasche 1990: 25; Hole 2010: 229), the abandonment of the alluvial plain beside the Mehmeh river and a major fall in settled area on the Deh Luran plain (Wright *et al.* 1975; Hole 1987b: 37; Neely and Wright 1994: 71–72). Evidence from Farukhabad for a decrease in use of cattle, an increase in use of goat over sheep, and a shift from wheat to barley are understood to betoken increasing aridity at this time (Miller 1981, 2011; Redding 1981; Neely and Wright 1994: 175). On the Behbahan and Zohreh plains at the south-eastern corner of Khuzestan, survey detected a three-tier site hierarchy, headed by Tepe Sohz at 13 ha, succeeded again at around 4000 BC by almost complete abandonment of the region (Nissen 1976; Dittmann 1984), a pattern of occupation also detected through survey of the Eastern Plains (Moghaddam and Miri 2003; Moghaddam 2012a: 67–69) and the Ram Hormuz plain midway between Susiana and Behbahan (Wright and Carter 2003; Alizadeh *et al.* 2013a).

Excavation at **Tol-e Chega Sofla** on the Zohreh plain, a transitional zone between Khuzestan and Fars, has investigated a series of well-furnished burials of late fifth-early fourth millennia BC date, one of which includes at least 52 individuals with some evidence for disease and violence (Moghaddam 2012a, 2016, 2018, 2020). Especially notable is the use of cranial shaping through head-bandaging, showing continuity of this distinctive practice in this region over several millennia following its earliest attestation at sites of the Neolithic Zagros (Chapter 5). Large numbers of high-quality copper goods, and small quantities of gold and silver items as well as stamp seals, were also found in the cemetery at Tol-e Chega Sofla. Ceramics in the form of jars, beakers and small bowls (Figure 6.46) are similar to those of contemporary sites including Susa, Jaffarabad and Jowi as well as Luristan cemetery sites such as Hakalan and Dum Gar-e Parchineh. Adjacent to the cemetery area, intriguing structures have been excavated, including a stone and mudbrick shrine and a deposit of more than 70 flat stones or stelae of distinctive shape, several of which have striking relief scenes of highly stylised human faces, arms and opposed wild goats (Figure 6.47–6.49). There are also pits containing complete skeletons of goat and cattle, likely deposited as offerings at this extraordinary site (Figure 6.50).

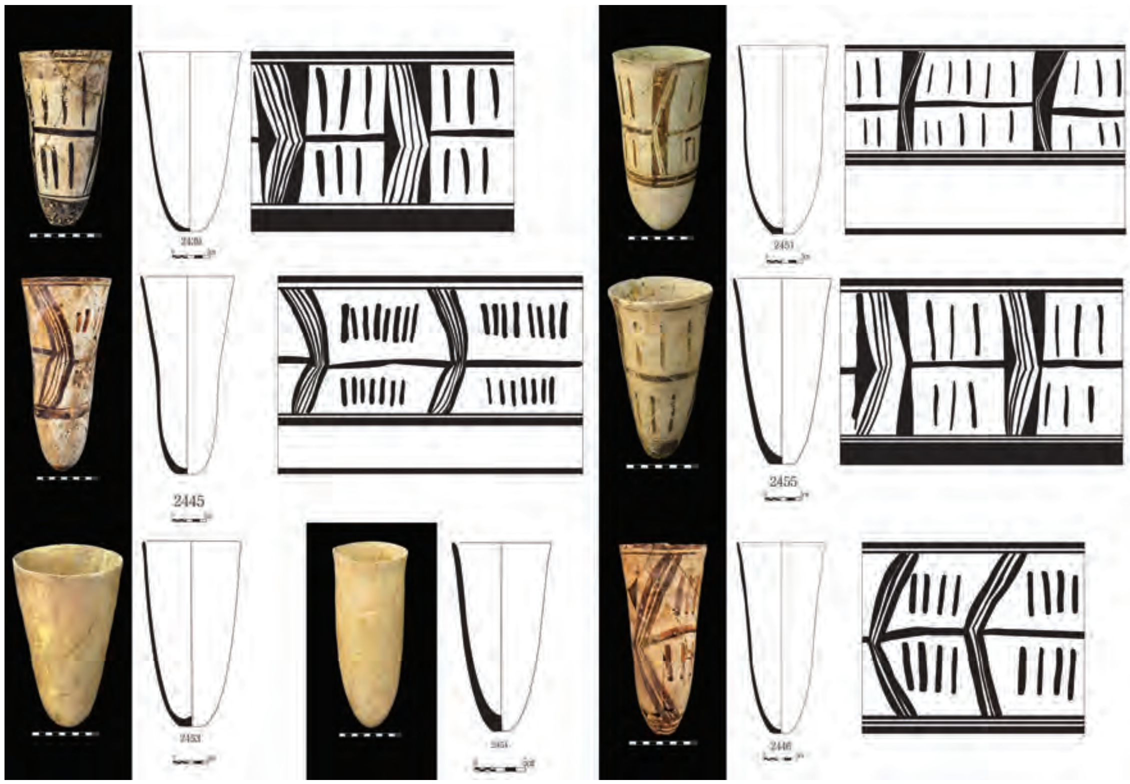

Figure 6.46 Tol-e Chega Sofla, painted ceramics (after Moghaddam 2020: Figure 85) (images courtesy of Abbas Moghaddam).

Figure 6.47 Tol-e Chega Sofla, view of shrine and adjacent features (Moghaddam 2020: Figure 53) (images courtesy of Abbas Moghaddam).

Figure 6.48 Tol-e Chega Sofla, deposit of >70 flat stones or stelae (Moghaddam 2020: Figure 41) (image courtesy of Abbas Moghaddam).

Figure 6.49 Tol-e Chega Sofla, selection of carved flat stones or stelae (Moghaddam 2020: Figures 94, 95, 101, 105, 132, 136) (images courtesy of Abbas Moghaddam).

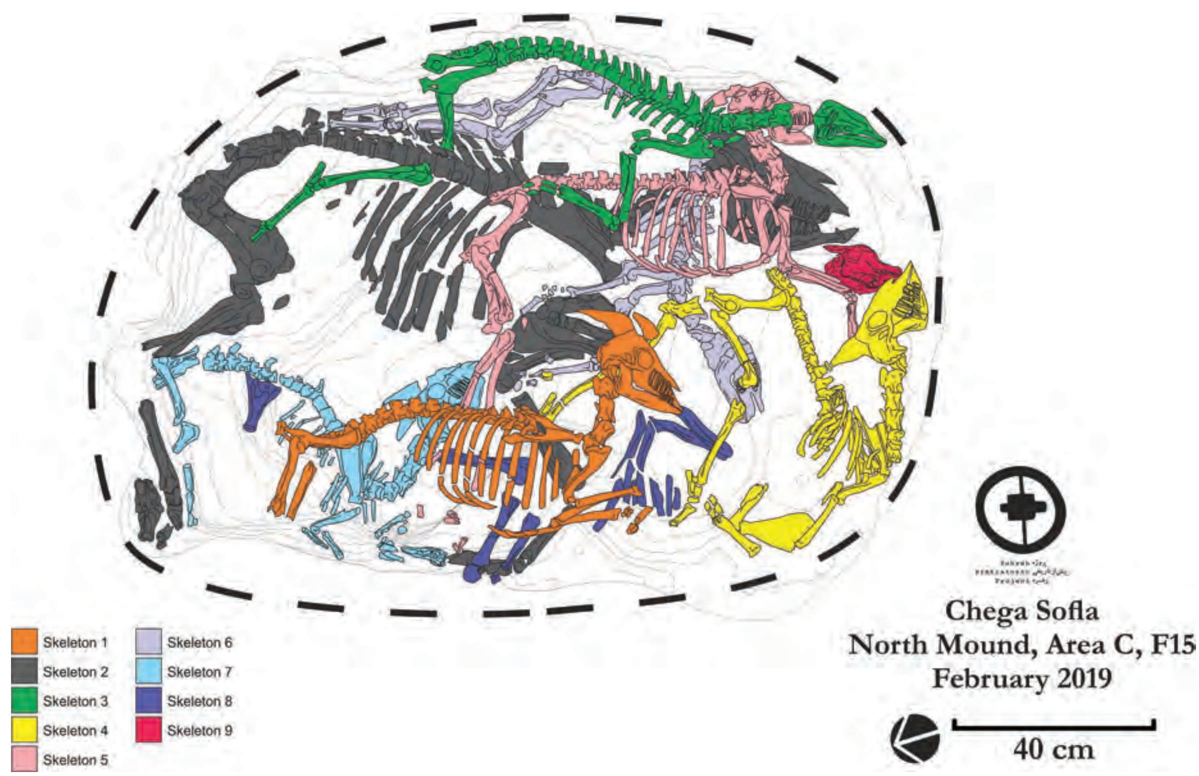

Figure 6.50 Tol-e Chega Sofla, multiple animal burial (Moghaddam 2020: Figure 49) (image courtesy of Abbas Moghaddam).

Hole (1987b: 38, 1992) has stressed the significance of a disruptive episode of environmental change spanning *c.* 4500–4000 BC, characterised by a decline in seasonal rainfall patterns following millennia of relatively high rainfall in the region, which clearly impacted sharply on agricultural productivity and on pastures for herded animals. Overall, then, settlements of south-western Iran during the later fifth millennium BC appear to have been rather small-scale, widely distributed, locally situated and lacking much evidence for interregional interaction (Wright 2013: 57).

The Middle Chalcolithic cemeteries of Hakalan and Dum Gar-e Parchineh in Luristan, discussed above, are not too distant from the Deh Luran and Mehran plains, and it is beyond doubt that there were intimate connections between the societies of the lowland plains and the Zagros highlands at this time. Indeed, Alizadeh (2008: 14) points out that pottery vessels from the Luristan cemeteries show evidence of connections across the highland zone through Susiana and into Lower Mesopotamia, suggestive of considerable mobility on the part of the pottery producers and consumers, possibly involving intermarriage. A so-called "ophidian" (snake-like) painted human figurine from one tomb at Parchineh shows strong resemblance to figurines from the Late Ubaid cemetery at Ur in Lower Mesopotamia, further indication of the extensive connectivity of the people buried in these Luristan tombs (Daems 2010: 156–157, Figure 10.5). Section sampling of Late Susiana levels at the small site of **Dar Khazineh** in eastern Khuzestan recovered faunal and plant remains that indicate seasonal occupation by sheep and goat herders with limited cereal use (Alizadeh 2008: 20).

The Late Chalcolithic, 4000–3100 BC: state formation and reformation and the resurgence of Susa and Chogha Mish

The Late Chalcolithic period in Khuzestan is one of the most dynamic in all of Iran's prehistory, witnessing as it did the rise of state-level societies, manifest in a doubling in size of Susa to 25 ha during the Susa II period, *c.* 3700–3100 BC, the construction of massive monumental architecture on the acropolis at Susa, the utilisation of sophisticated administrative devices only one step removed from early writing, including hollow clay balls, cylinder seals and numerical texts, and the use of a figurative iconography at Susa and Chogha Mish attesting high status males (or deities – see below) engaged in acts of militancy and large-scale construction. These attributes are understood to indicate the emergence of institutional, centralised authority, administered by a privileged elite who strove to control access to the materials and artefacts of power. Such developments in south-western Iran cannot be separated from contemporary developments in Lower Mesopotamia, south Iraq, through the course of the so-called Uruk period, which is conventionally divided into Early, Middle and Late phases. Indeed, it has been suggested that the major increase in population and urban growth in Lower Mesopotamia from *c.* 4000 BC, richly attested in survey data (Adams 1981), must have been at least partly supported by migration into Lower Mesopotamia of significant numbers of people from south-western Iran, and perhaps from elsewhere in Iran too (Kouchoukos and Wilkinson 2007; Hopper and Wilkinson 2013: 44). Assumed connectivity between the plains of Lower Mesopotamia and those of Khuzestan underpins use of the term "Greater Mesopotamia" to include both these regions along with southern Anatolia and the northern Levant (Benati 2018).

Many archaeologists have approached south-western Iran as an arena for research into early state societies. But what are state societies and how do we detect, characterise and investigate them archaeologically? Before we address the archaeological evidence of the region in this light, we need to articulate what we might expect to find that would identify a society as a "state" or at "state-level." During the 1960s and 1970s, while fieldwork in Iran was at its apogee (Chapter 3), much American anthropological and archaeological research was invested in addressing these questions. As Melinda Zeder (1991: 2) has articulated, three recurrent components of definitions of the state are social stratification, centralised governance and specialised economy. Varying emphasis on any of these three factors can significantly shape a research agenda, for example by prioritising a concern with material evidence for administration if centralised governance is selected as the primary factor. Common to multiple theories about the origins of the state is an acceptance that it was the development of capacity for agricultural surpluses (Yoffee 2005: 229), subsequent to the Neolithic transition to farming (Chapter 5), which enabled the development of stratified, complex societies, such as the ones we have been examining so far in this chapter, and in turn the appearance of fully state-level societies. This is not to say that farming necessarily leads to surplus and that surplus necessarily leads to complex societies that in turn lead to states, but rather to stress that the capacity to generate surplus is essential for the development of complex and state-level societies. Without surpluses generated through farming, states could not have evolved (Scott 2017).

In a stimulating critique of approaches to archaic states, Norman Yoffee (2005: 231) has put the case that the development of human societies into state or state-like polities is an inevitable outcome of social and environmental conditions of the Holocene age:

> It is our last myth, then, that cities, states, and civilizations are rare and precious entities in the evolution of human societies and so require special explanations for their development…. Our growth model, however, holds that states are the expected products of post-Pleistocene circumstances, and the histories of societies that do not become states require as much explanation as do the various kinds of the earliest states that did evolve.

In this argument, the states of Late Chalcolithic south-western Iran might be seen as naturally flowing from all that went before (as recounted in preceding chapters of this book): the peopling, shepherding, controlling, ordering, exploiting, channelling of Iran's range of natural and human resources as larger and more complex societies steadily grew and spread across the landscape. The challenge would then shift to explaining why states did not develop in other areas of Iran at the same time as they did in Khuzestan, and also to considering why states collapsed when and where they did.

Henry Wright's (1977, 1978, 1984, 1998, 2001, 2013) theoretically informed projects and reviews have been crucial in the development of research into the state in the context of south-western Iran. For Wright (1977: 383), the critical factor in defining state-level societies is the specialisation of centralised decision-making, which both enables massive expansion in information processing capacity of the controlling authority, and restricts the ability of lower-level social actors to challenge higher-level authority. In the context of south-western Iran through the course of the fourth millennium BC, we may interpret the appearance and flourishing of technologies of control and administration, manifest as cylinder and stamp seals, clay sealings, hollow clay balls and tokens, and numerical and numero-ideographic tablets, as material correlates of Wright's conceptualisation of hugely increased capacities for information processing and for hierarchies of decision-making that are such key components of early states, while conceding that not all activities involving the act of sealing need to be correlated with societal complexity. Critical to the concept of centralised decision-making is the existence of institutions capable of fulfilling such a role. As Benati (2018) articulates, the emergence of institutional organisations across Greater Mesopotamia through the fourth millennium BC was fundamental to the construction and expansion of the large-scale networks of socio-political engagement that characterise state-level societies.

More specifically, the roles of Iran in the development of the so-called "Uruk phenomenon" or "Uruk expansion" of the mid-fourth millennium BC is a much-debated topic (summarised in Petrie 2013b: 5–15; Wright 1998, 2013; Pittman 2013b). While much new fieldwork and research has taken place in the northern and north-western regions of Southwest Asia involved in the Uruk phenomenon (Butterlin 2003), there is a need for new excavations of key Late Chalcolithic sites in Khuzestan and other regions of Iran in order explicitly to address the nature of Iran's roles in this early globalising episode in human history (Jennings 2011; Petrie 2013c: 399). These issues are discussed further below in the context of reviewing the evidence from Susa and Chogha Mish.

As Alizadeh (2008: xxii) has pointed out, application of the Uruk-period terminology to Khuzestan assumes a relationship of some kind between Khuzestan and Lower Mesopotamia (Wright 2001), which as yet is poorly understood, particularly for the first half of the millennium. He therefore eschews use of the Uruk terminology and instead divides the fourth millennium BC in Khuzestan into Early Susa II (= Early Uruk, Susa Acropole level 22), Middle Susa II (= Middle Uruk, Susa Acropole levels 21–19), and Protoliterate (= Late Uruk, Susa Acropole levels 18-17), and we follow him here except in that we choose to replace the value-laden term "Protoliterate" with the more neutral Late Susa II. The term "Protoliterate" originates from Mesopotamian contexts, in particular early excavations at Uruk, Kish, Jemdet Nasr and Uqair, at all of which sites very early evidence for writing, in the so-called proto-cuneiform style, is attested (Englund 1998) while no such writing has been found in Late Susa II sites in Iran (see below).

During the Early Susa II and Middle Susa II periods, *c.* 3900–3500 BC, settlements began to recover and increase in size and quantity across Khuzestan, following the period of settlement collapse attested in the Terminal Susa A period (Figure 6.51) (Johnson 1973: 90, 1987: 286; Wright 2001: Table 4.1, 2013: 59–60; Kouchoukos and Hole 2003: 58; Moghaddam 2012a: 70). By the Middle Susa II period a four-tiered hierarchy of settlement existed on the Susiana plain (Johnson 1973; Rothman 1987; Wright 1998), a possible indicator of state-level development (Flannery 1998: 16). Occupation had been re-established across the entire 18ha of the site at Chogha Mish and a new settlement of up to 12 ha is attested at Tappeh Abu Fanduweh, where there are

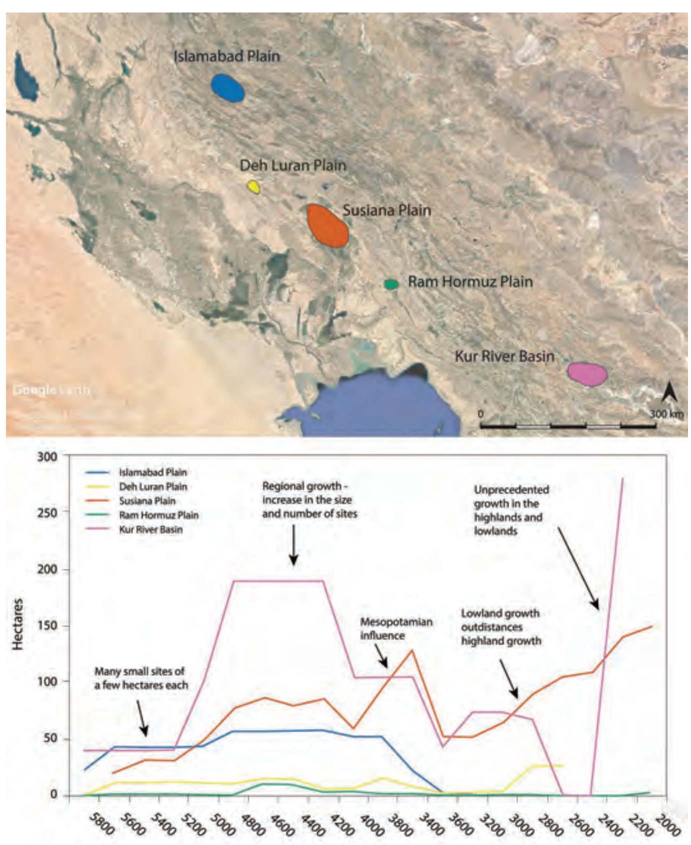

Figure 6.51 Settlement through time in south-western Iran according to regional surveys (adapted from Hopper and Wilkinson 2013: Figures 3.1, 3.8).

6 m of Protoliterate deposits (Johnson 1973: 109–111; Alizadeh 2008: 23, 25; Wright 2013: 65). Thus, at about 3500 BC there were three major regional centres in Susiana: Susa, Chogha Mish and Tappeh Abu Fanduweh (Alizadeh 2008: 25). Henry Wright (1998: 179) estimates that up to 25,000 people were living on the Susiana plain at this time in some 60 scattered communities. On the Ram Hormuz plain the site of Tall-e Geser appears to thrive through much of the fourth millennium BC (Caldwell 1968; Whitcomb 1971; Wright and Carter 2003: 67; Alizadeh 2014).

Excavations at one of the small villages, **Tepe Sharafabad**, revealed modest mudbrick houses with typical domestic utensils, as well as evidence for a more elaborate building with clay cone decoration (Wright 1981). Items such as carnelian beads and stone vessels indicate trade and exchange with neighbours near and far. Much of the excavation focused on a deep, rubbish-filled pit, called the Uruk Pit and dating to the late Middle Uruk/ Middle Susa II period, such that annual and even seasonal accumulations of rubbish were discerned (Figure 6.52). On the basis of this pioneering microstratigraphic approach and the associated finds of sealings, tokens and other domestic items, Henry Wright and Susan Pollock investigated issues of the administration of village agricultural life (Wright *et al.* 1980, 1989; Pollock 2008; Charvát 2019). Clay sealings with impressions of stamp and cylinder seals, along with counters, show village involvement in the storage and distribution of goods and commodities in a network of interaction with larger centres such as Susa and Chogha Mish. Villagers were cultivating wheat, barley, lentils and flax while herding sheep, goat and a few cows and pigs (Mudar 1988; Miller 2011; Wright 2013: 65). Chipped stone tools from the Uruk Pit comprise mainly chert blades including many with visible sickle sheen from harvesting crops of grain or reeds (Pollock 2008). Middle Susa II village life on the Susiana plain at this time is summarised thus: "country people of the Susiana Plain derived most of their durable consumer goods from other types of settlements, while producing foods for themselves and other settlements" (Wright *et al.* 1980, 1989; Wright 1998: 182). Those "other settlements" would have included Susa, as the population of Susa in the Middle Susa II phase was probably too large to be self-sufficient in grain (Johnson 1973: 96–98). Clearly, the production of grain by external villages for supply to a densely inhabited regional centre, such as Susa had become, as well as the use of seals and counters in a system of supra-local administration, necessitate a probably asymmetric relationship of some kind between the participants, which may itself be interpreted as an attribute of early state formation.

Relations with Lower Mesopotamia are indicated in pottery assemblages of Susiana and sites such as Uruk and Nippur in southern Iraq (Figure 6.53) (Johnson 1987; Wright 1987). Within these socio-political processes, Hole and Flannery (1968) stressed the significance of irrigation and exploitation of domesticated cattle in the emergence of state-level societies, two agricultural innovations that enabled greater productivity and led rapidly to population increase and urban-scale settlement where conditions allowed for it. The role of craft specialisation in these complex processes is not wholly clear. Initial proposals by Johnson (1973) and Wright and Johnson (1975) that dispersed rural pottery production in the fourth millennium BC in Susiana was supplanted by centralised production at Susa, Chogha Mish and Abu Fanduweh have been countered by analyses of ceramic fabrics by Berman (1987), Ghazal *et al.* (2008) and Emberling and Minc (2016), which indicate dispersed, localised production, distribution and consumption of ceramics, including of bevelled-rim bowls, across the

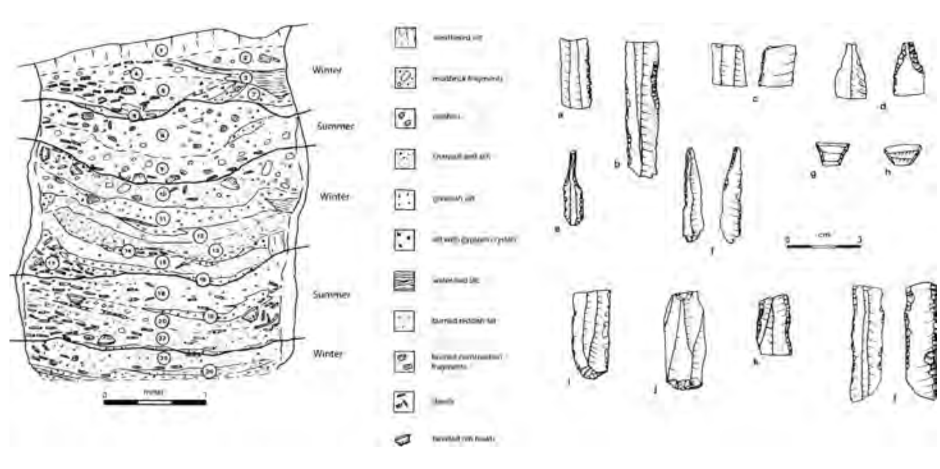

Figure 6.52 Tepe Sharafabad, section of Uruk Pit and associated chipped stone tools (after Pollock 2008: Figures 2–3).

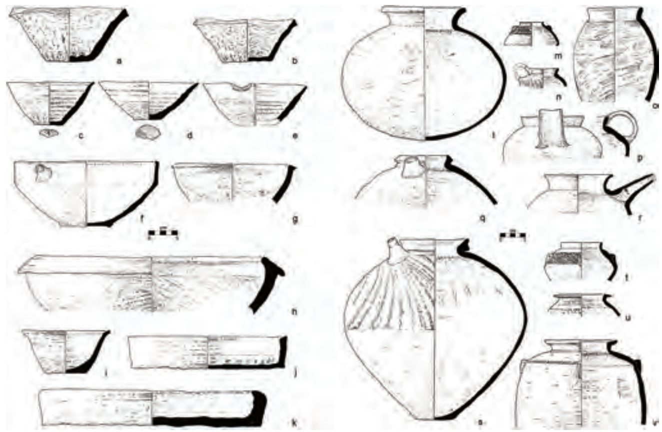

Figure 6.53 Tepe Sharafabad, ceramics of Middle Uruk type (after Wright 2013: Figures 4.10–4.11).

region. Nevertheless, there is clearly a high degree of standardisation in production of many ceramic forms during the fourth millennium BC, attesting increased technologies and skills in this craft, with the majority of production at supra-household levels (Wright 2001: 134–136). Analysis of ceramics from Tall-e Geser on the Ram Hormuz plain indicates significant movement of vessels, and no doubt their contents, from Susiana to Ram Hormuz. In particular a ceramic ring scraper, a type of specialised pottery-making tool, probably from Late Susa II levels at Tall-e Geser, was found to be made of clays from the region of Tappeh Abu Fanduweh in Susiana, very likely carried to Geser by an itinerant specialist potter (Alden *et al.* 2014). A tradition of specialisation in architecture is also enhanced at this time, with evidence for standardised brick sizes, building measurements and bonding techniques, as well as increasing decorative elaboration in the form of niches, buttresses and coloured plasters (Wright 2001: 136–138).

The transition at **Susa** from the preceding Susa I period is poorly understood. Louis Le Breton (1957) made a bold attempt at synthesising results from the long history of early excavations at Susa, demonstrating for the first time in a systematic manner the strong affiliations of what he called Susa B with the material culture of Uruk in Lower Mesopotamia. Le Breton's analysis was significantly enhanced by subsequent work at Susa under Jean Perrot, with Alain Le Brun's sounding in Acropole I yielding a well-stratified sequence spanning the fifth to early third millennia BC (Le Brun 1978, 2019, 2021). Further study of the ceramics from Susa and Uruk (Dittmann 1986a; Butterlin 2003) demonstrated that close connections between Uruk and Susa, as well as sites in Susiana such as Sharafabad (Wright *et al.* 1980), could be dated to the Middle Uruk period in Lower Mesopotamian terms, connections that strengthen further into the Late Uruk/Late Susa II period.

Excavations on the Northern Acropole at Susa exposed a possible grain storage facility with charred wheat, complex clay tokens and a stamp seal of Early Susa II date (Wright 2013: 60; Schmandt-Besserat 2018: 370–374). By Middle Susa II times both the Acropole and the lower mound at Susa appear to have been occupied, with a total settled area of up to 25 ha (Wright 2013: 65). The material culture of Late Susa II, in particular, shows extremely strong parallels with contemporary evidence from Uruk and other sites in Lower Mesopotamia as well as with Habuba Kabira South and Jebel Aruda on the Euphrates river *c.* 700 km to the north-west in Syria (Algaze 1989, 1993; Potts 1999: 52–58). This shift in cultural connections signifies a decline in Susa's highland relations at the same time as an intensified engagement with Mesopotamia to the west. Ceramics of Late Susa II, as from Chogha Mish, are comparable to those of Lower Mesopotamian sites such as Nippur and Uruk. A few fragments of large stone sculpture in the round are known from Susa, as well as small-scale sculptures from the so-called Archaic Deposits (Figure 6.54) (Amiet 1976b; Benoit 1992; Álvarez-Mon 2020: 45–51). These caches of fine sculptures along with multiple beads, seashells and small stone vessels, may represent temple offerings. While most of them appear to date to the Late Susa II period, a few of the sculptures are Proto-Elamite in style, and so it is possible that they were collected and deposited in the Proto-Elamite period (Chapter 7). The figures are in the form of male and female worshippers, as well as birds and animals including a monkey and a bear. Sophisticated metalwork of jewellery and figurines in copper, lead, silver and gold display ongoing development of skills and techniques including very early evidence of welding (Figure 6.55) (Álvarez-Mon 2020: 54).

Figure 6.54 Susa, Late Susa II stone vessels and statuettes (Álvarez-Mon 2020: pl. 22) (photo credit: Javier Álvarez-Mon).

During the later fourth millennium BC use of the stamp seal, which had been around for many centuries, was augmented and often supplanted by the new cylinder seal, an ingenious invention for rolling designs over soft clay surfaces leading directly to

> a burst of imagery representing animals and hybrids in a multiplicity of styles, arrangements, and behaviors, and a new wave of quotidian scenery showing a level of interest in depicting daily activities that would not be matched again in any other period of the ancient Near East.
>
> (Álvarez-Mon 2020: 38)

Seal-cutters across Mesopotamia and Iran were not slow to make imaginative use of this new device, and we have an astonishing range of iconography surviving in the form of the seals themselves but also, more commonly, as the pieces of clay ("sealings") on which seals had been rolled or impressed, which often survive in their hundreds and thousands (Figure 6.56). As Holly Pittman has commented (2013b: 294)

> a radical transformation can be observed in the domain of image-making in the Uruk period, which like writing, was founded on a cognitive breakthrough that grasped and exploited in new ways the potential of non-verbal, representational, and abstract images to store and convey information vital to the functioning of an increasingly complex society.

Furthermore, in her detailed analysis of glyptic imagery from Susa and sites in Susiana, Pittman (2013b: 295) suggests that the cylinder seal imagery that has often been seen as originating at Uruk is in fact first attested in Susiana, although we should bear in mind that our knowledge of Middle Uruk sites and material culture in Lower Mesopotamia is very limited. She traces the development of glyptic iconography at Susa directly from the so-called "baggy style," which can be dated to Middle Uruk/Middle Susa II on the basis of finds and ceramics from Susa Acropole I level 20 and from the Susiana sites of Sharafabad and Farukhabad. These seals and sealings

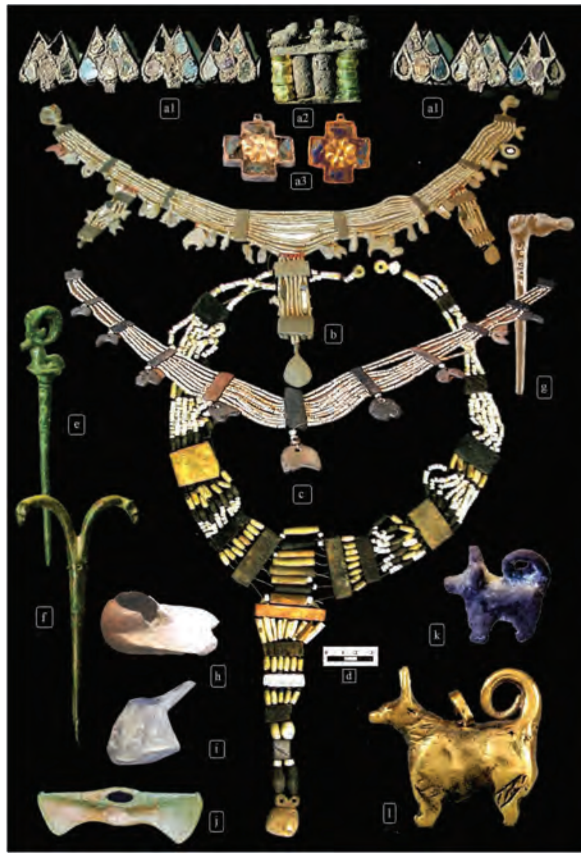

Figure 6.55 Susa, Late Susa II jewellery and metalwork (Álvarez-Mon 2020: pl. 25) (photo credit: Javier Álvarez-Mon).

depict scenes of workers making vessels, processions of human figures, conflict between humans and a possible precursor to the Late Uruk priest-king (Pittman 2013b: 297–299), all of which will become major elements of the classic Late Uruk style but which are until now unattested in Middle Uruk Lower Mesopotamia.

Thus, many cylinder seal impressions from Susa in the Late Susa II period can be seen as developing from those of stamp seals in the Susa I period (Delaporte 1920; Amiet 1972; Pittman 1992a, 2001a, 2013b; Piran 2013). There is an increased range in the practices of sealing, including many types of containers (pots, bags, sacks, baskets), door-pegs, clay tablets and clay balls or bullae (Amiet 1988; Dittmann 2012; Charvát 2019), largely associated with domestic architecture (Pittman 2013b: 296). Anthropomorphic figures, often naked, wear headbands and distinctive hairstyles while engaging in a range of activities. Although there are many similarities with cylinder seal scenes from Uruk, the Late Susa II seal impressions show a range of scenes rare or absent at Uruk, including building construction, storage of grain and manufacture of goods (Pittman 2013b: 295, 302). Especially notable in the glyptic of Susa and Chogha Mish, as well as Sharafabad, are scenes showing workers carrying out various productive activities, including handling vessels and textiles, loading grain at granaries and in the act of administration or accounting of these activities (Pittman 2013b: 312–313, 1993). Pittman's interpretation of the differences in glyptic repertoires from Susa and Chogha Mish as against Uruk in the Late Susa II/Late Uruk period is that

> during Eanna V and IVb cylinder seals were used in Mesopotamia to control different economic sectors than was the case in Susiana. To judge from the images, emphasis in Susiana is on production of commodities, while in Mesopotamia the emphasis is more on the movement of goods to an institution and on the activities surrounding the control of a workforce that was ultimately under the supervision of the paramount ruler.
>
> (Pittman 2013b: 319)

Heraldic designs of wild animals, rosettes and birds are common at Susa and Chogha Mish, and there is evidence for borrowing of Susa II motifs as far afield as late Predynastic Egypt probably via the northern Levant (Teissier

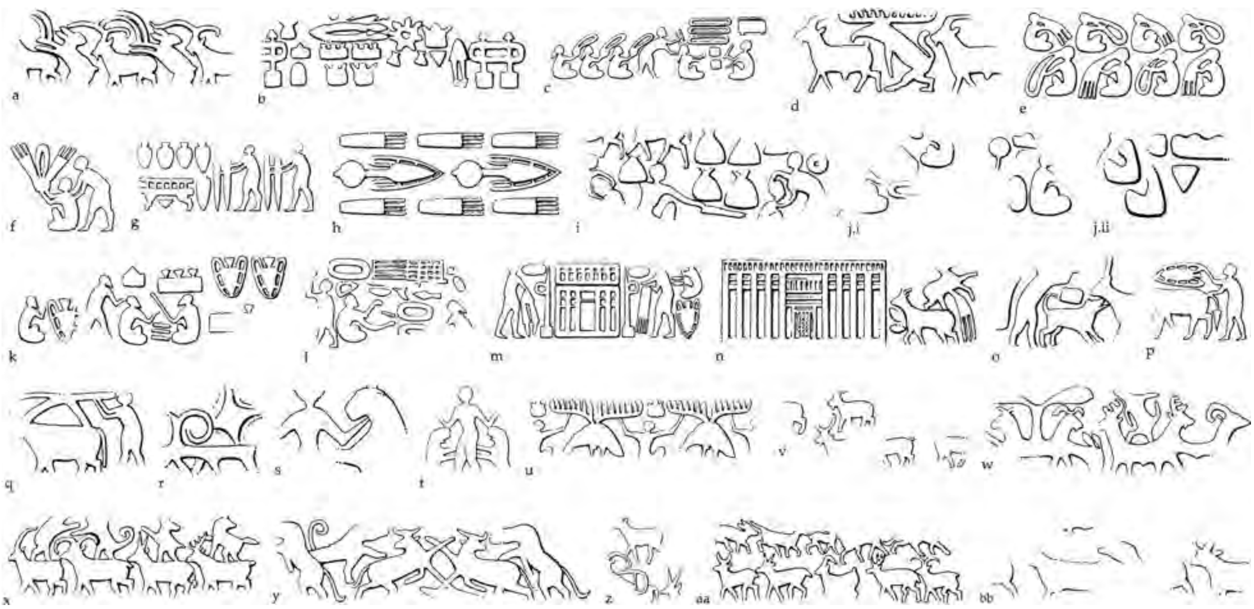

Figure 6.56 Susa, Late Susa II cylinder seal impressions on sealings from Acropole I.18 (after Pittman 2013b: Figure 16.10) (images courtesy of Holly Pittman).

1987). In addition to seal scenes specific to Susa and Chogha Mish, there is also a wide spectrum of iconography that can be denoted as interregional in its geographical distribution, as attested at Susa, Chogha Mish and Uruk but also at sites in Upper Mesopotamia such as Habuba Kabira, Jebel Aruda, Sheikh Hassan, Tell Brak and Hacınebi (Pittman 2013b: 308–309). Interregional scenes include caprid animal files, snake-necked felines, processions of nude males and possible "priest-king" figures. Neutron activation analysis of the clays used for sealings at Hacınebi suggests that some of them, bearing seal images closely comparable to those of Susa and Chogha Mish, arrived at Hacınebi having travelled along with small-mouthed jars with incomers all the way from Khuzestan (Blackman 1999; Pittman and Blackman 2016). The ample bitumen deposits of Khuzestan also appear to have been increasingly exploited through the fourth millennium BC by nascent state-level societies of the region and well beyond, principally for the purpose of waterproofing the reed boats used in burgeoning interregional trade networks (Schwartz 2002; Schwartz and Hollander 2016).

Some seal impressions, from Susa and from Chogha Mish, show a bearded male figure, larger than others in the scene and usually wearing a skirt and headband, engaged in activities such as hunting, sitting in a boat or presiding over the beating of bound prisoners (Figure 6.57) (Amiet 1986b; Dittmann 1986b; Pittman 1992a: Figure 28; Schmandt-Besserat 1993: 208–209; Potts 1999: 67–69, Figure 3.12, 2016: 64–66; Nissen 2001: 157). This figure is often called a "priest-king" and clearly represents a high-status or sacred individual, whose origins might be sought in the shaman-like figures depicted in Susa I stamp seals (Marchesi and Marchetti 2011: 187; Pittman 2013b: 297). More recent studies have proposed that these figures be understood as directly betokening true kingship, since the figure is depicted performing activities that we believe in later times to be typically conducted by kings (Steinkeller 1999; Gibson 2010: 87). Marchesi and Marchetti's (2011: 186–196) contextual study of "priest-king" depictions, however, makes a convincing case that the skirted figure consistently represents a male form of the goddess Inana, and has no direct connection to the origins of kingly authority in third millennium BC Mesopotamia. They argue that the skirted figure is subsequently attested in Early Dynastic I-II evidence from Girsu and other sites of Lower Mesopotamia as a clearly sacred representation, while a totally separate iconography is developed to represent true kingship from the middle of the third millennium BC onwards.

On those grounds, we may conjecture that the "priest-king" representations from Late Chalcolithic Susa and Chogha Mish (see below) may indicate the worship of Inana at these sites in the later fourth millennium BC. Specifically, depictions at Chogha Mish, at least, of the "priest-king" seated on a theriomorphic throne on a

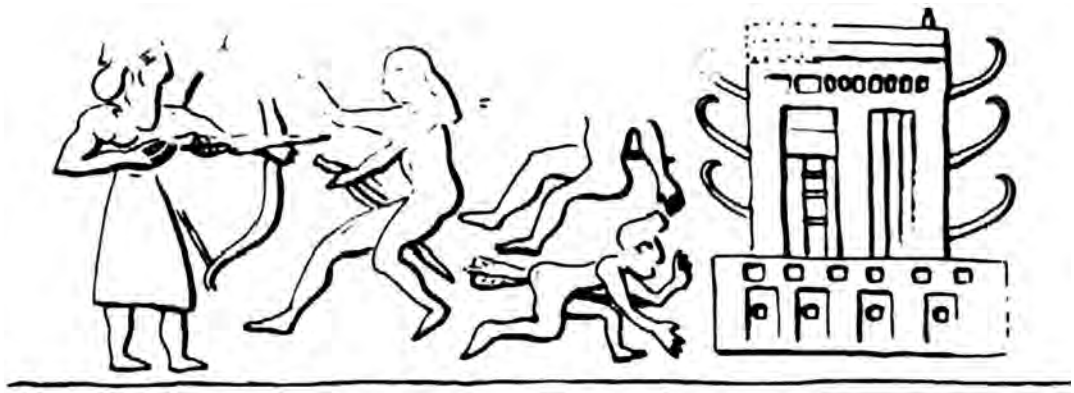

Figure 6.57 Susa, Late Susa II cylinder seal impression depicting a "priest-king" in combat before a monumental horned building (after Pittman 1992a: Figure 28) (image courtesy of Holly Pittman).

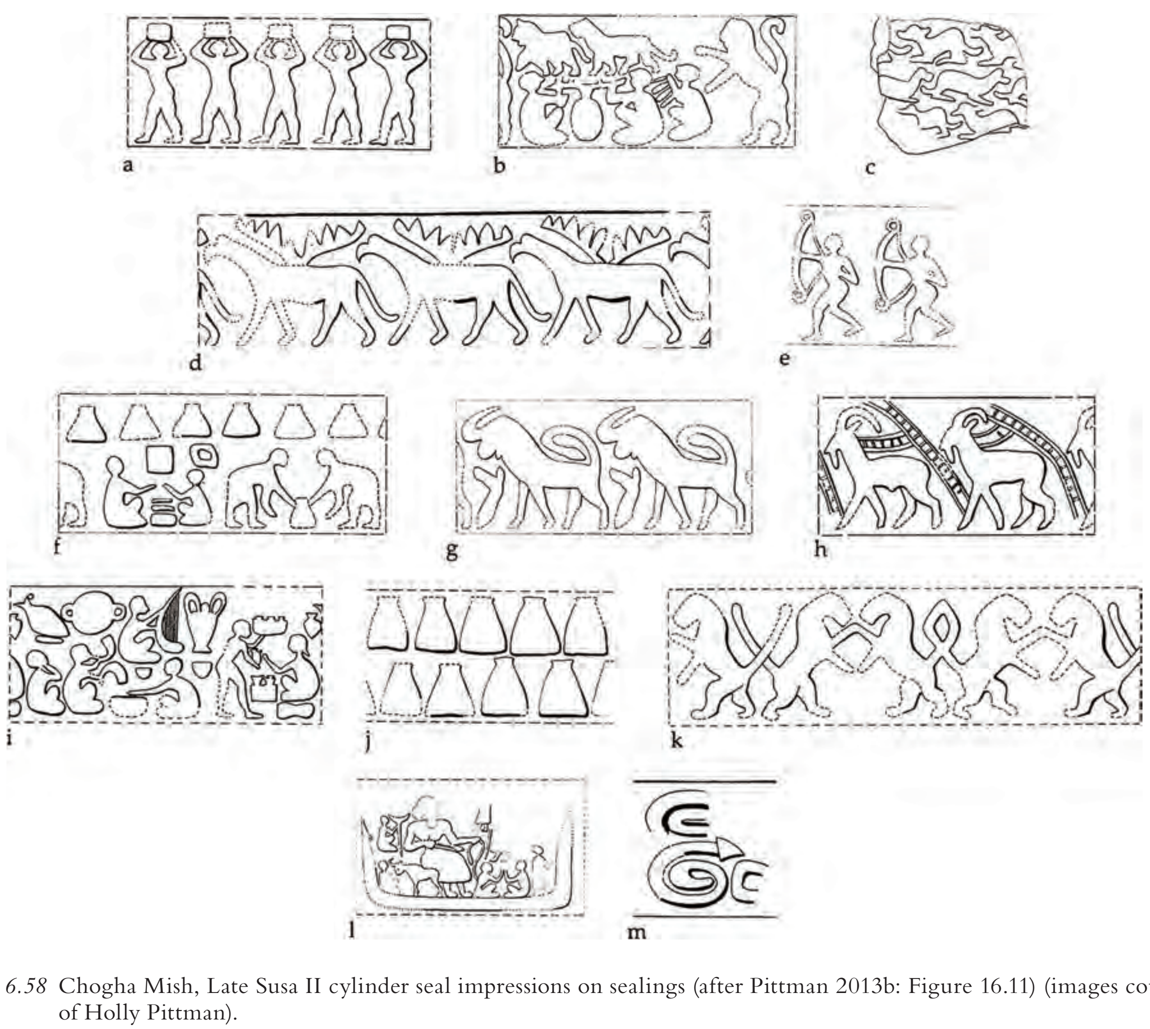

Figure 6.58 Chogha Mish, Late Susa II cylinder seal impressions on sealings (after Pittman 2013b: Figure 16.11) (images courtesy of Holly Pittman).

boat with attendants (Figure 6.58) (Álvarez-Mon 2020: pl. 17b) might then align with the so-called "city seal" evidence on tablets and sealings from the Mesopotamian cities of Uruk, Uqair and Jemdet Nasr, of Uruk III/ Jemdet Nasr date, i.e. *c.* 3000 BC, which have been interpreted as associated with cultic processions by boat of the goddess Inana, visiting dedicated shrines city by city and receiving offerings at each stopping place (Matthews and Richardson 2018). More broadly, in an ambitious study Reinhardt Dittmann has linked seal iconography with administrative function to generate a flow diagram of Late Susa II economic organisation at Susa, headed by the high-status person who oversees a range of administrative units including temple/palace, hunting, industrial, herding, storage and transportation (Dittmann 1986b: Table 1).

Cylinder seals were extensively used at Late Susa II sites of Iran, including even small hamlets such as Sharafabad (Wright *et al.* 1980; Wright and Johnson 1985), either to impress lumps of clay that were used to seal store-rooms and a range of portable containers such as bags, pots and boxes or to seal so-called numerical tablets. These tablets are small rectangular cakes of fine clay bearing impressions made by a stylus in the form of circles and wedges, representing numbers, as well as rollings of seals. Numerical tablets are found at sites across Iraq, western Iran and Syria, which correlates with the geographical extent of Uruk, or Susa, impact within and beyond Lower Mesopotamia and Iran (Englund 1998: 50–52; Chrisomalis 2010: 228–239; Pittman 2013b: 319–322). Some 90 numerical tablets were found at Susa, far more than at any other contemporary site in Iran (Potts 2016: 61), along with more than 60 sealed hollow clay balls (Figure 6.59) (Amiet 1972). The Susa numerical tablets employ three different counting systems, as opposed to some 13 counting systems in use at Uruk (Potts 2016: 62), an indication that the Susa administration was probably not as complex as that at contemporary Uruk (Dittmann 1986b: 332). There are suggestions that the numbers impressed on numerical tablets bear relation to the long-standing use of clay and stone tokens (Schmandt-Besserat 1981, 2018; Englund 1998: 50–55). Jöran Friberg's work on the number systems attested by the tokens, and by the marks made by tokens impressed on the surfaces of hollow clay balls (which themselves contain tokens), establishes a clear relationship between at least some types of clay token and specific counting systems, including decimal, sexagesimal, bisexagesimal and capacity measures (Friberg 1994: 495).

What is clear is that tokens, hollow clay balls and numerical tablets play an important part in the development of the world's earliest true writing systems, culminating in proto-cuneiform texts at Uruk and Proto-Elamite texts in Iran (Chapter 7) by the later fourth millennium BC. These systems comprise clay tablets often with number signs but also with the addition of impressed and incised signs that clearly convey specific meanings within a shared discourse, i.e. they constitute writing (Nissen *et al.* 1993; Englund 1998; Cooper 2004; Dahl 2013). Of particular note here are tablets of so-called numero-ideographic type, defined as numerical tablets with the addition of only one or two incised signs or ideograms. They are seen as developmentally transitional between numerical tablets and proto-cuneiform written tablets, that is, between counting and writing (Englund 1998: 51–54). Numero-ideographic tablets are more limited in their distribution than purely numerical tablets, being found only at Uruk in Lower Mesopotamia and at Susa, Godin VI:1, Sialk IV_1 and Sofalin in Iran (Hessari 2011; Matthews 2013; Pittman 2013b: 329). At Susa they are found in levels 18C and 17A of the Acropole I sounding (Le Brun and Vallat 1978; Englund 1998: 56; Dahl 2013: 242), immediately prior to the abrupt break in occupation at Susa that marks the transition to the Proto-Elamite period (Chapter 7). Dahl (2005b: 82) notes that numero-ideographic tablets from Uruk and those from Iran can be differentiated in that Mesopotamian examples have number signs preceding the

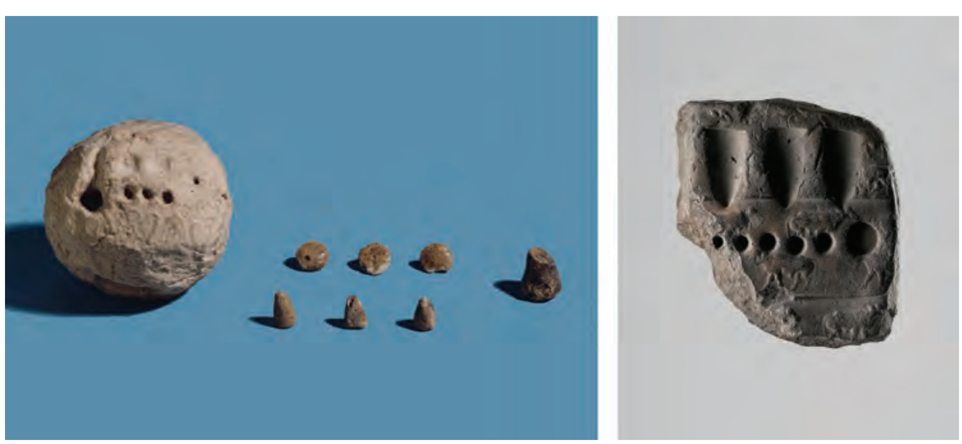

Figure 6.59 Susa, Late Susa II sealed bulla with tokens and numerical tablet (SB1927; photo credit: © RMN-Grand Palais, Musée du Louvre/Gérard Blot; SB2313; photo credit: © RMN-Grand Palais, Musée du Louvre/Thierry Ollivier).

ideographic sign(s) while the Iranian examples have the ideographic sign(s) before the number signs, as is the case with the single numero-ideographic tablet from Godin VI:1 discussed above (Matthews 2013).

In fact, the evidence at Susa for early stages in accounting, prior to the development of full proto-cuneiform and Proto-Elamite writing, is extremely rich (Le Brun 1978, 2021; Le Brun and Vallat 1978; Dittmann 1986b; Pittman 1992: 52–57; Potts 1999: 59–65; Abdi 2003a: 146–147; Schmandt-Besserat 2018; Álvarez-Mon 2020: 36–45). Such evidence comprises simple and complex clay tokens, hollow clay balls containing tokens and covered with cylinder seal impressions, clay tags with tally marks, and numerical tablets, as discussed above. What remains unclear, however, is to what extent these various forms of evidence can be assembled into a developmental narrative that satisfactorily accounts for the origins of writing. It is important to note that where there are secure contexts for administrative artefacts at Susa they are found within what appear to be domestic architectural contexts (Le Brun 1978, 2021; Wright 1998: Figure 6.3). The continuation of elements of this complex administrative apparatus into the succeeding Proto-Elamite period is considered in Chapter 7. Indications of continuity in cultic practice from Susa I into Late Susa II are provided by continued use of the "spade-headed" and looped standards in Late Susa II glyptic scenes of clear cultic significance (Pittman 1992: 55), as well as the depiction on seal impressions of cultic buildings with inset animal horns (Potts 1999: pl. 3.2) bringing to mind the clay goat horns adorning the *haute terrasse* of Susa I.

In the Late Susa II period, once more **Chogha Mish** becomes an absolutely key site for approaching developments in Khuzestan and beyond (Delougaz *et al.* 1996; Alizadeh 2008). Chogha Mish expands in size at this time to match the scale of contemporary Susa, coupled with rural abandonment in the zone between the two sites, which may be indicative of conflict between Susa and Chogha Mish in the later fourth millennium BC (Johnson 1973; Wright 2013: 68). Late Susa II occupation of Chogha Mish appears to be restricted to the earlier phase, equivalent to Late Uruk, with no evidence for slightly later occupation, equivalent to Jemdet Nasr (Alizadeh 2008: 23–24), although Mutin (2013a: 22) suggests that some of the ceramic types from Chogha Mish do have parallels with Proto-Elamite vessels from Tepe Yahya level IVC (Chapter 7). During the Late Susa II occupation at Chogha Mish, there are two major architectural phases, with occupation of both the High Mound and the Lower Terrace. Characterised as a "planned Protoliterate town" (Alizadeh 2008: 26), the settlement layout includes public and private buildings, streets, drains and wells and craft quarters. On the High Mound the Late Susa II architecture has been partially obliterated by the Old Elamite fortifications of the early second millennium BC (Chapter 10). What is still detectable is a substantial rectangular structure with walls so thick, 3 m, that it may have originally been an extremely imposing tower on the High Mound (Figure 6.60) (Alizadeh 2008: Figure 8), visible for considerable distances. Close to the tower are fragments of rooms with kilns, pits and a sophisticated drainage system. In the fill of this part of the site multiple mosaic cones, clay tokens and clay sealings were found, indicative of a significant concern with administration and control over movement of materials and goods.

The East Area of the Lower Terrace at Chogha Mish includes both public and private buildings built of classic Uruk-style *Riemchen* mudbricks, with use of baked bricks in pavements, drains and wells (Alizadeh 2008: 26, Figures 16–17). Rooms are interpreted as segments of domestic buildings, some with fireplaces and benches. No human burials were found under the house floors. There is much evidence for pottery production in the form of kilns and ceramic wasters (Alizadeh 1985b), alongside large quantities of clay sealings, numerical tablets, hollow clay balls and tokens. As on the High Mound there is a very well-built system of drainage and sewers to carry waste off the settlement. The first phase of the East Area Late Susa II settlement is dominated by a monumental building with central court with recessed doorways and niches (Figure 6.61) (Alizadeh 2008: 43, Figure 16). A heap of gazelle femur bones was found in the main antechamber to this building, which was partially paved with baked bricks (Figure 6.62) (Alizadeh 2008: pl 13: B). It seems likely that this extremely well-built structure was a temple and that the gazelle bones relate to offerings. Although there were few finds from within the monumental building itself, the recovery from other contexts of large quantities of administrative artefacts such as tokens, sealings, hollow clay balls and numerical tablets strongly suggests that the Chogha Mish East Area building was involved in the receipt, storage and distribution of agricultural produce and other materials on behalf of a divinely-sanctioned elite cadre of bureaucrat/priests. Furthering this interpretation is the fact that a group of numerical tablets (Alizadeh 2008: 79, pl. 22: E-I) was found in a small room within what looks like a storage facility directly to the southwest of the monumental building. Among the few notable finds within the building are two distinctive female figurines (Alizadeh 2008: 81, Figure 79: G, pl. 26: A), one of which is a voluptuously carved bone figurine only 3.55 cm high (Figure 6.63). It seems likely that they also relate to religious activity within this building.

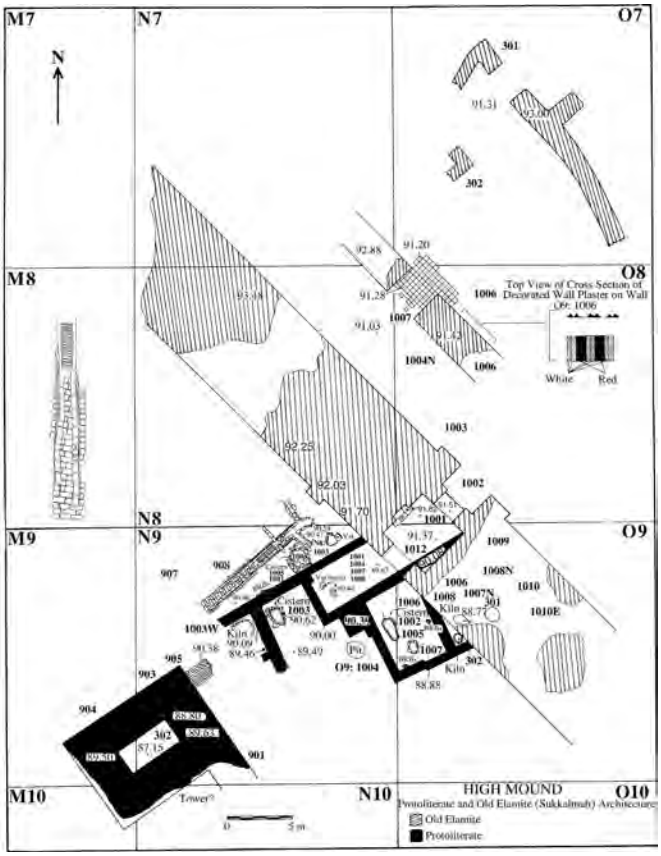

Figure 6.60 Chogha Mish High Mound, Late Susa II and Old Elamite architecture (Alizadeh 2008: Figure 8) (image courtesy of the Oriental Institute of the University of Chicago).

Late Susa II-period seal impressions on clay sealings, numerical tablets and hollow clay balls from Chogha Mish give a vivid picture of socio-political life (Delougaz *et al.* 1996: Table 16; Alizadeh 2008: 79–80, Figure 76; Dittmann 2012; Charvát 2019), with motifs including plants, animals and humans portrayed in a range of activities such as walking in files, in ritual scenes, banqueting, combating animals and occasionally in elaborate military scenes (Figure 6.64). One impression, mentioned above, shows a so-called "priest-king" or deity seated on a bull inside a boat (Figure 6.58: bottom left) (Amiet 1980: 1669), while another includes the earliest known depiction of a musical ensemble, with string, percussion and wind instruments all depicted in festive use by squatting humans (Lawergren 2018: 781). More broadly, the use at Chogha Mish of a complex suite of administrative devices, as at Susa, illustrates the entanglement of the bureaucracy there with contemporary existing systems in use at Uruk and at other sites of Lower and Upper Mesopotamia, all of whom were involved in increasingly meticulous regimes of control over movement and storage of materials and commodities to an extent that the invention of full writing at Uruk and in Iran, on clay tablets in the proto-cuneiform and Proto-Elamite scripts (Chapter 7), came to be the next step.

As at Susa itself, Late Susa II ceramics from Chogha Mish show numerous parallels with assemblages from selected Late Uruk sites in Lower and Upper Mesopotamia, exclusively of the Protoliterate a–b phases with no evidence for classic Jemdet Nasr types such as polychrome jars and solid stands (see Chapter 7) (Matthews 1992, 2002c; Delougaz *et al.* 1996: 101). Huge numbers of bevelled-rim bowls were found at Chogha Mish, often in discrete deposits in pits and often deliberately turned upside-down (Figure 6.65) (Delougaz *et al.* 1996: 50, pl. 15: A–C). Daniel Potts (2009: 13) has proposed that the bevelled-rim bowls at Chogha Mish suggest the baking of leavened bread there on an industrial scale, possibly as payment for labour performed, while Jill Goulder (2010: 359) sees the association of bevelled-rim bowls with administrative artefacts as indicative of a taste for "prestige bread" amongst the bureaucratic cadre at Chogha Mish. Identification of beeswax residue in a bevelled-rim bowl

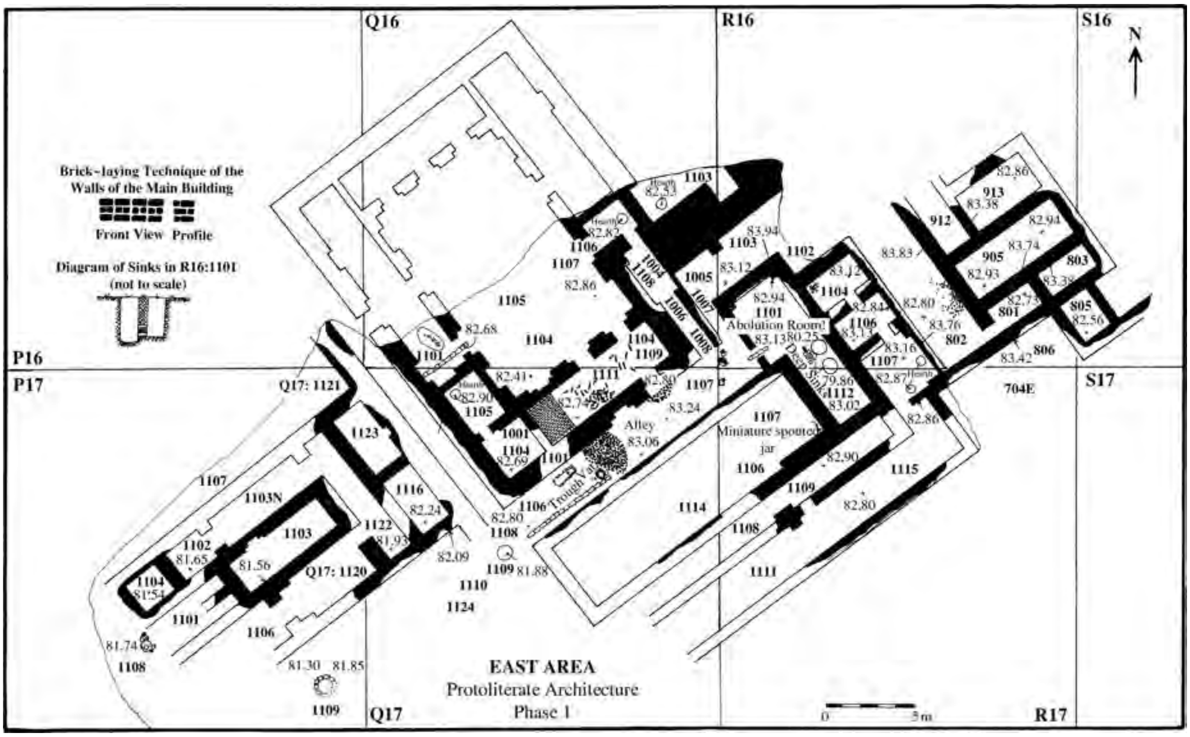

Figure 6.61 Chogha Mish East Area, Late Susa II phase 1 architecture (Alizadeh 2008: Figure 16) (image courtesy of the Oriental Institute of the University of Chicago).

Figure 6.62 Chogha Mish, gazelle femur bones from room 1005, Late Susa II phase 1 architecture (Alizadeh 2008: pl. 13B) (image courtesy of the Oriental Institute of the University of Chicago).

from Late Chalcolithic levels at Tepe Sofalin on the Tehran plain may indicate collection or storage of honey in some of these bowls (Mayyas *et al.* 2012). Ceramic parallels at Chogha Mish are especially strong with Susa Acropole I level 18, Eanna precinct level VI at Uruk and, above all, with Habuba Kabira South, this last site located 700 km distant from Chogha Mish on the middle Euphrates in Syria. This near identity in ceramics at Chogha Mish and Habuba Kabira South is matched in other aspects of material culture and suggests that similar factors shaped their socio-political trajectories. The pottery correlations suggest that Chogha Mish was abandoned during the later Late Susa II period, around 3200 BC.

Figure 6.63 Chogha Mish, Late Susa II carved bone figurine (Alizadeh 2008: pl. 26A) (image courtesy of the Oriental Institute of the University of Chicago).

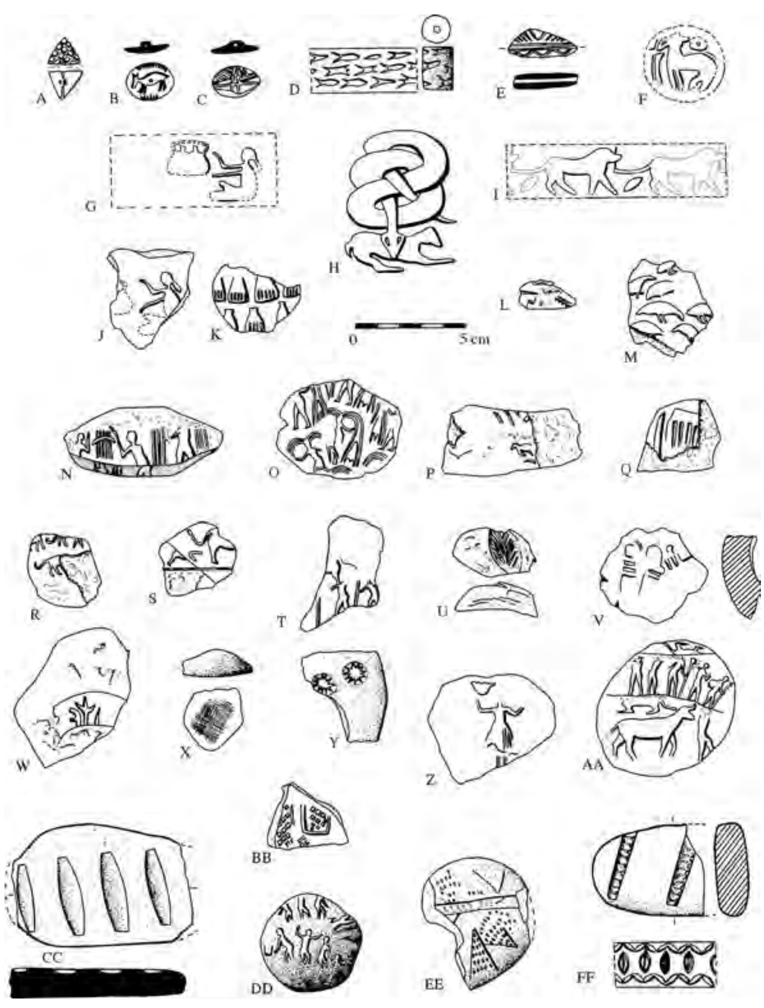

Figure 6.64 Chogha Mish, Late Susa II seals and seal impressions (Alizadeh 2008: Figure 76) (image courtesy of the Oriental Institute of the University of Chicago).

Figure 6.65 Chogha Mish East Area, Late Susa II upturned bevelled-rim bowls (Delougaz *et al.* 1996: pl. 15A–C) (images courtesy of the Oriental Institute of the University of Chicago).

Explaining the evidence from Late Chalcolithic Khuzestan: some attempts

The material culture of Khuzestan, including Susa and Chogha Mish, in the Late Susa II period of the fourth millennium BC is virtually identical to that of major sites in neighbouring Lower Mesopotamia as well as to Habuba Kabira South in Upper Mesopotamia although, as we have seen, there are differences for example in the iconographic repertoires depicted on the cylinder seal scenes of the two regions (Amiet 1957, 1972; Delougaz *et al.* 1996: 148). How do we explain the material culture similarities? As Holly Pittman (1992a: 52) puts it: "Susa holds important clues to the dynamic of an enormously vital first civilization." In longer-time perspective, Pierre Amiet (1979b, 1993) has underlined the importance of what he calls an ethnic duality at the heart of Susiana and Susa in particular, whereby "Susa was alternately attached to the two antithetical worlds of Mesopotamia and the plateau, an alteration which, it seemed to me, reflected the dual nature of the two ethnic elements that co-exist in the region to this day" (Amiet 1993: 23), an idea that can be traced back to the French epigrapher Vincent Scheil (1905; Abdi 2003a). In articulating this deep-time janiform trajectory for Susa, Amiet points to the highland connections of the pottery and other artefacts of Susa I, the intimate Mesopotamian connections of Susa II, the highland orientation of Susa III (Chapter 7) and finally the reversion to Mesopotamian alignment in the later third millennium BC (Chapter 10). In Amiet's schema, material culture connections directly reflect the alternating political dominance of two ethnic components already present in the indigenous population of Susiana without the need to invoke intrusion into Susiana by alien peoples. Amiet's ideas can be traced to the early twentieth century when the epigrapher Vincent Scheil (1905) had already discerned ethnic duality at Susa based on his reading of the cuneiform texts, a duality composed of Mesopotamia, the lowlands, on the one hand and Elam, the highlands, on the other (de Miroschedji 2003). Rooted in a study of the deep-time development of ceramics at Susa, Butterlin (2003) has argued that Uruk-style pottery was very much a local development at Susa, and not suggestive of a sudden intrusion from outside, an argument that chimes with Pittman's (2013b: 297) view that cylinder seal imagery also developed gradually and locally at Susa first and foremost.

By contrast, Guillermo Algaze (1989, 1993, 2001, 2013; *contra* Stein 1999; see also Kohl 1987) argues that the material culture connections of Late Susa II are underpinned by a direct cultural, if not political, hegemony over

Susiana exercised by elite groups from Uruk who organised the mass colonisation of Susiana, in line with their desire to secure points of access to the rich material resources of the highland zone to the east, including captive human labour for the massive building projects of the newly burgeoning cities of the Mesopotamian plains (Englund 2009). Such colonisation, if occurring from around 4000 BC, would not be a major challenge as the settlement evidence indicates an episode of regional abandonment across Susiana at this time, as we have seen above. Uruk colonists could simply have boated and walked across from the west with their animals, built their villages, and started farming. In this argument there would have been similar movements of Uruk administrators, villagers and animal herders across central Mesopotamia and up the Euphrates as far as Habuba Kabira South and Jebel Aruda, as well as up the Tigris to Nineveh where they also established carefully planned settlements (Sürenhagen 1974–1975; Strommenger 1980; Algaze 1993).

There is some indication of a Lower Mesopotamian, i.e. Sumerian, origin for the patron deity of Susa, Inshushinak, which may also suggest a significant intrusion of Uruk-led influence, if not people, into Susiana (Steinkeller 1993, 2018), although the textual evidence for the existence of Inshushinak as deity of Susa dates rather later, to the mid-third millennium BC (Potts 2016: 58). It is possible that Susa itself, as well as Uruk, was involved as a mother city for some of these colonising movements, as perhaps attested at Godin Tepe (see above; Weiss and Young 1975; Matthews 2013; Pittman 2013b: 329). A counter argument (Johnson 1987) is that sites such as Susa and Chogha Mish represent independent small states, competing with each other and with Uruk for domination of the region and control over the rural economy and over access to imported goods, but the strong compatibility of material culture at Uruk and Susa suggests a very close political and economic relationship (Potts 1999: 55). We can in any case concur with Pittman's (2013b: 334) balanced evaluation that "While always a neighbour, however, Susiana and Susa are only rarely completely dominated by Mesopotamia. More often, Susiana is uniquely the closest point of contact for a competing cultural entity." In like vein, Potts (2016: 63–64) argues that as only 3 of the 13 accounting systems attested at Uruk were adopted at Susa and then on tablets differing in physical form from contemporary Uruk tablets, the transmission of the new forms of administrative bureaucracy from Mesopotamia to Susiana was not effected by colonial administrators from Uruk. Chiming with this view is Dahl's (2005b: 82) comment on the differences in text layout of Susa numero-ideographic tablets as against those from Uruk.

It is important to bear in the mind the sheer scale of Uruk in the Late Susa II period, with the settlement taking on truly urban proportions (Nissen 2001, 2002). Uruk expanded from 70 to perhaps 250 ha by 3100 BC (and to *c.* 600 ha by 2800 BC), ten times the area of Susa in the same period, and the two major cultic precincts of Eanna and Kullab, dedicated to Inana and Enlil respectively, were constructed with multiple monumental buildings often interpreted as temples but more recently understood as public assembly halls with associated cultic functions (Nissen 2001: 154–155; Butterlin 2015). The population may have numbered 20,000–40,000 individuals (Nissen 2002: 7), a demographic explosion further illustrated by the huge increase in settlement of the region around Uruk at this time, forming a four-tier settlement hierarchy (Adams and Nissen 1972; Adams 1981). Newly settled communities may have been taking advantage of the freshly exposed Lower Mesopotamian plains, as the headwaters of the Persian Gulf receded from *c.* 3500 BC (Nützel 1975; Nissen 1993: 69; Pournelle 2013). Within this context of chaotically escalating complexity, the administrators of Uruk devised a revolutionary system of recording: using a stylus to impress and incise signs on clay tablets (Nissen 1993; Englund 1998), the start of the cuneiform tradition that was to hold sway over much of Southwest Asia for some three millennia. It is little exaggeration to regard these components of Lower Mesopotamian societies of the late fourth millennium BC as constituting an Urban Revolution (Nissen 1993: 55).

Turning to the end of the Susa II period in Khuzestan, a striking feature of the settlement pattern of Susiana is the collapse of rural settlement, with a fall from 52 sites in the Middle Susa II period to only 13 in the Late Susa II period (Johnson 1973: 143), and similar patterns pertained on the Deh Luran and Izeh plains (Wright 1998: 191–194; Hopper and Wilkinson 2013: Figure 3.5). Only one site continued to be occupied on the eastern side of the Susiana plain, a fact interpreted by Alizadeh (2008: 25; Wright and Johnson 1975, 1985) as indicative of increased interest in this region on the part of highland mobile pastoralist groups, leading to insecurity and village abandonment across the region. By 3000 BC and into the third millennium BC, Susa was the only major site of the entire region and up to half the population of the Susiana plain was living there (Alden 1987). The collapse of settlement in Susiana by *c.* 2800 BC brought to an abrupt end a millennia-long process of demographic development in the region and represents a major settlement break in the region (de Miroschedji 2003: 19, Figure 3.3). These dramatic developments in settlement distribution and abandonment are further considered in the following chapter, as they relate to the Proto-Elamite episode of occupation (Chapter 7).

Chalcolithic societies of south and south-eastern Iran

As with other regions of Iran, the major narrative of the Chalcolithic in south and south-eastern Iran is one of steadily increasing complexity in all aspects of social, economic and political life, as attested in settlement patterns, craft technologies and modes of production, long-distance trade and exchange, and the ongoing development of administrative practices (Petrie 2013c). As Cameron Petrie (2011, 2013c) has pointed out, the physical geography of southern Iran has had a major impact on the distribution of human settlement in the region and on the often attenuated channels of natural communication connecting widely scattered valleys and plains. The picture we are able to generate from the diffuse evidence is one of diverse paths to complexity, interspersed with occasional episodes of transcendence of local constraints by globally ambitious polities.

The Early Chalcolithic of Fars, 5000–4000 BC: settled or mobile (or both)?

The fifth millennium BC in Fars is known as the Bakun period (Early, Middle and Late) after excavations at Tall-e Bakun (Voigt 1987; Voigt and Dyson 1992: 138–140; Helwing and Seyedin 2010), marked by mineral-tempered black-on-buff ceramics painted with various motifs and fired at high temperatures (Weeks *et al.* 2010; Petrie 2011). Intensive investigations of the Kur river basin over many years have been instrumental in establishing the chronology and socio-economic development of the region through the fifth millennium BC, in particular through excavations at Tall-e Bakun A and B (Langsdorff and McCown 1942; Egami and Masuda 1962; Alizadeh 2006), Tal-e Jari A, Tal-e Gap (Egami and Sono 1962), Tol-e Bashi (Abdi *et al.* 2003; Pollock *et al.* 2010), and Rahmatabad (Bernbeck *et al.* 2005; Marghussian *et al.* 2009; Azizi Kharanaghi *et al.* 2013, 2014a, 2017), and regional surveys along the river basin (Vanden Berghe 1952, 1954; Gotch 1968, 1969; Sumner 1977, 1990, 1994). Excavations at Tall-i Nokhodi near Pasargadae also revealed levels of Bakun A date, including elaborately decorated ceramics, structures with walls of pisé and ovens (Goff 1963, 1964).

The fact that black-on-buff ceramics are found widely distributed both within Fars and well beyond, including along the Persian Gulf coast (Askari Chaverdi *et al.* 2008; Mutin 2012: 165–166), suggests a strong degree of interconnection between fifth millennium BC communities of southern Iran (Petrie 2013a: 123–124). Excavations by Sir Aurel Stein and survey by Askari Chaverdi (*et al.* 2008) at **Tol-e Pir** in the Galehdār valley in the south of Fars province, just 20 km from the coast of the Persian Gulf, show a significant fifth millennium BC occupation of this remote region. Closer still to the shore, the site of **Chahar Roustaei** sits on dense sand deposits, and has yielded Middle Bakun-style ceramics and other materials suggestive of a possible function as a seasonal base for exploitation of marine resources from the nearby sea (Azizi Kharanaghi *et al.* 2018).

Early Bakun occupation is known at only two excavated sites, **Tal-e Jari A** level I and Tall-e Bakun A level II (Voigt and Dyson 1992: 138), with indications also at **Tal-e Gap** and **Tol-e Nurabad** (Weeks *et al.* 2009, 2010: Table 16.1). No sites in Fars appear to have occupation sequences that span the entire fifth millennium BC (Petrie 2013a: 124), a feature suggestive of a significant degree of settlement disruption and/or mobility through the millennium. Regional survey of the Kur river basin demonstrated a major increase in settlement coverage during the Bakun period, with occupation spreading out from the Neolithic pattern of close association with springs or alluvial fans (Sumner 1994: 52; Weeks *et al.* 2010: 249). Sites were largely small, less than 1 ha, but a few sites were larger than 6 ha in this period, including **Tol-e Bashi** (Sumner 1994: Table 2). It is notable too that as many as 108 surveyed sites in the Kur river basin show evidence for settlement continuity from the Neolithic into the Chalcolithic (Sumner 1990: 99). In the Mamasani region of western Fars settlement steadily increased through the Bakun phase (Zeidi *et al.* 2009) and there is evidence for a special purpose building in the form of a single-room "shrine" at Tal-e Gap (Egami and Sono 1962).

Excavations at **Tall-e Bakun A**, levels III and IV, exposed a large spread of multi-roomed architecture built of mudbrick and *chineh*, dating to the later fifth millennium BC (Figure 6.66) (Langsdorff and McCown 1942; Egami and Sono 1962; Alizadeh 1988, 2006; Pollock 2010). Within the settlement there is evidence for metal-working, ceramic production and extensive use of clay tokens, stamp seals and about 140 clay sealings, the majority of them from store-room door-pegs (Matthews 2008), which has suggested the existence of an "administrative quarter" (Figure 6.67) (Alizadeh 1988, 1994, 2006: 83–90). Alizadeh proposes that the evidence for extensive use of seals and sealings at Bakun, as at contemporary Tepe Gawra level XIII in north-eastern Iraq (Matthews 2008) "is symptomatic of the deterioration of kinship system, particularly in the economic and political affairs, a necessary development in the evolutionary processes of the early complex societies" (Alizadeh 1994: 51). Alizadeh further postulates that society at Tall-e Bakun A was dominated either by a few families engaged in manufacture and trade in specific goods and/or by a cadre of people with high status who controlled the flow of goods through use of tokens, seals and sealings (Alizadeh 2006: 88). There is little evidence, however, for internal social differentiation at Bakun A, despite claims that one building may have been an elite residence (Alizadeh 2006: 58) or possibly a cultic structure (Fraser 2008). Human figurines from Bakun have elongated heads (Figure 6.68), indicating that the already ancient practice of head binding was still current on the Iranian plateau (Daems 2010).

Beyond Tall-e Bakun, evidence for local production of Bakun-type ceramics in kilns is widespread across Fars and beyond (Petrie 2013a: 128) and there is little evidence for regional specialisation in particular types of vessel

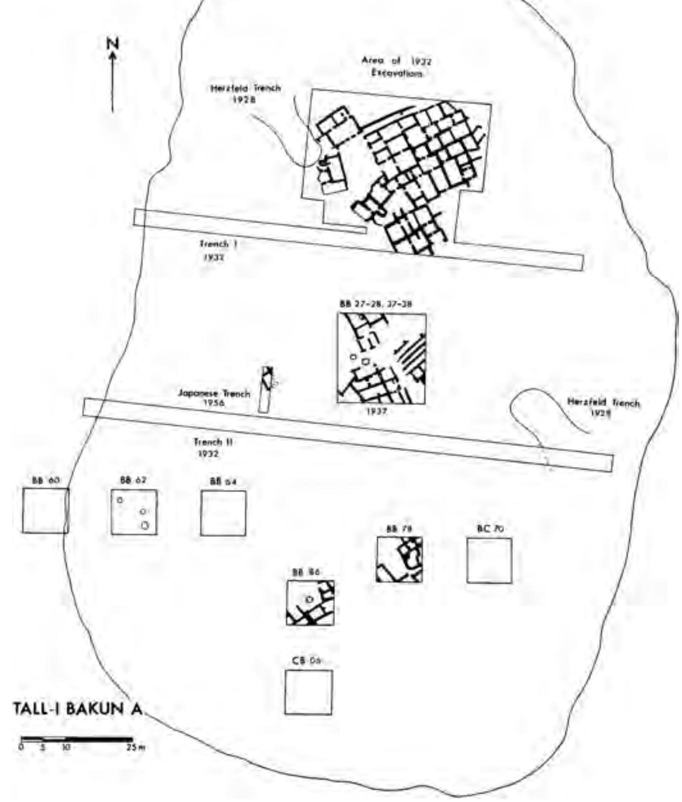

Figure 6.66 Tall-e Bakun A, levels III and IV architecture (Alizadeh 2006: Figure 7) (image courtesy of the Oriental Institute of the University of Chicago).

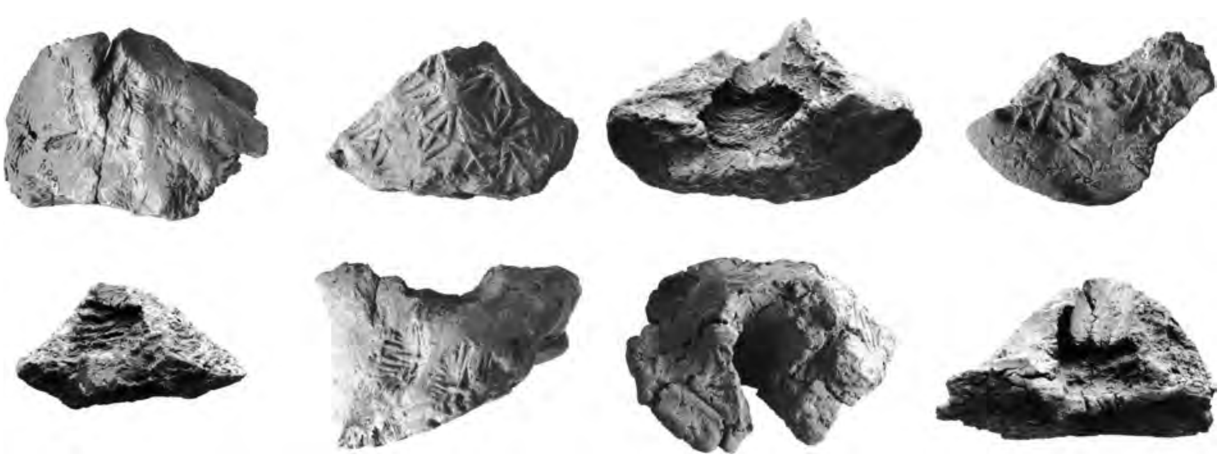

Figure 6.67 Tall-e Bakun A, levels III and IV clay sealings (Alizadeh 2006: pl. 17) (image courtesy of the Oriental Institute of the University of Chicago).

or decoration (Helwing and Seyedin 2010). Excavations at **Rahmatabad**, however, suggest the inhabitants of the site may have been involved in specialised pottery production on quite a large scale, certainly with a high degree of technological skill and showing a strong correlation between vessel form and decorative motif (Figure 6.69) (Marghussian *et al.* 2009; Azizi Kharanaghi *et al.* 2014a, 2017). The site of **Tal-e Mash Karim** in Esfahan province north of Fars has yielded more than 30 clay tokens and a possible clay tally piece (Niknami *et al.* 2018) suggestive of a significant need for accounting and recording of the distribution of certain commodities. Lithic assemblages from Mash Karim suggest a steady increase in agricultural activity, attested by sickle blades,

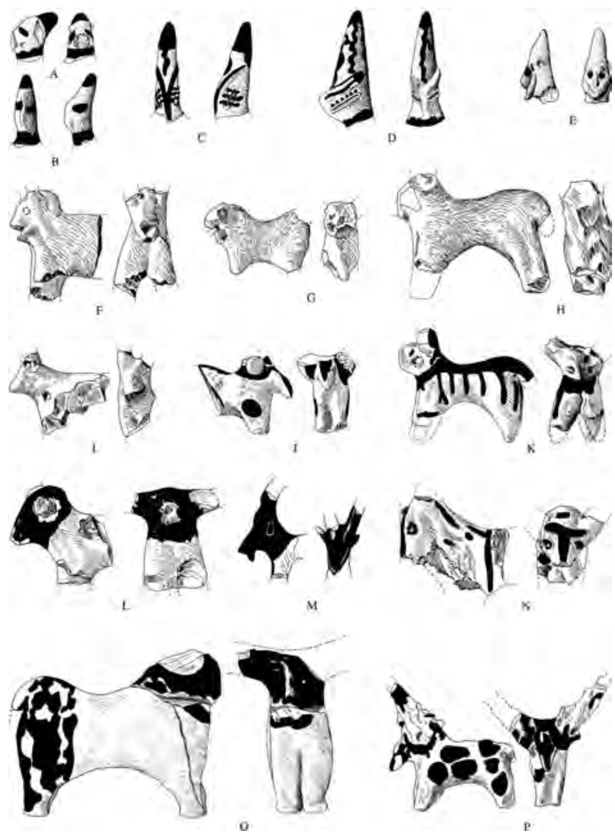

Figure 6.68 Tall-e Bakun A, human and animal figurines (Alizadeh 2006: Figure 58) (image courtesy of the Oriental Institute of the University of Chicago).

accompanied by a decline in hunting, while also indicating significant cultural interactions between Fars and the Susiana lowlands to the west (Nishiaki *et al.* 2018).

The economy of Early Chalcolithic settlement in Fars was very much a consolidation of the regime established there during the few centuries of the preceding Neolithic, with an emphasis on wheat, barley and lentils, and exploitation of domesticated goat, sheep, cattle and pig, with increasing use of caprid by the Late Bakun phase (Zeder 1991: 61; Mashkour *et al.* 2006a; Mashkour 2009). Alizadeh (1988, 2003b, 2006, 2010; Zagarell 1982) has argued for the significance of pastoral nomadism in the development of social complexity in southern Iran, suggesting that communities at sites such as Tall-e Bakun A would not have been able to generate sufficient agricultural surplus from their environs to support the evidence at the site for specialised craft production in metal-working and ceramics. Brief excavations at the upland site of **Saki Abad** in the Bakhtiari region revealed scattered stone structures associated with Bakun A ceramics, interpreted as remains from a pastoral nomadic campsite (Shirazi *et al.* 2015). The absence of intramural burials at Bakun A and at other sites in Fars is striking, and Alizadeh (2006: 93) suggests that this absence may be due to the nomadic practice of burying their dead in open spaces, away from settlements. By contrast, Potts (2016: 53) is convinced that "the population of Chalcolithic Fars was overwhelmingly and probably exclusively sedentary." Investigation of exactly this issue formed the research design for a programme of settlement survey and excavation in the Darre-ye Bolaghi region in Fars that failed to identify significant evidence for seasonality of occupation or patterns of mobility (Helwing *et al.* 2010). We also note the excavation of a small Bakun-period pottery production site in the **Darre-ye Bolaghi**, in which three human burials were found, one of which contained the disarticulated remains of nine individuals and a collection of 14 painted vessels (Helwing and Seyedin 2010: 287, fig, 17.9; Helwing *et al.* 2012).

William Sumner (1994), in contrast to Alizadeh, interpreted the Bakun-period evidence from Fars as indicative of the emergence of ranked societies composed of competing kinship groups, based on increasing "prosperity previously unknown and not equalled again in Fars for almost two millennia" (Sumner 1977: 303). Weeks *et al.* (2010: 250) have pointed out that the evidence cited by Alizadeh (2006) for the specialised roles of farmer and pastoral nomad could equally be seen as indicating a mixed agro-pastoral economy, and that even without

Figure 6.69 Rahmatabad, Middle Bakun ceramics, motifs and correlation of motifs with vessel form (Azizi Kharanaghi *et al.* 2017: Figures 5–6) (photo credit: Hosein Azizi Kharanaghi).

irrigation it would have been possible for the occupants of Tall-e Bakun A to generate agricultural surpluses (Petrie 2013a: 129). Similarly, the evidence from spindle whorls and plant remains (Miller and Kimiaie 2006; Sudo 2010) for wool and plant exploitation does not settle the debate either way (Potts 2010b).

On balance, it is probable that the people of Tall-e Bakun A and similar contemporary villages pursued a flexible economic strategy in accordance with varying environmental and climatic factors, in some years laying more stress on arable farming and surplus accumulation, in others devoting more people, time and energies to seasonal movements with their herds to the high summer pastures. Some involvement in hunting and gathering was also always an option. Such flexibility is vividly demonstrated in observations of contemporary pastoral nomads of the same region, the Qashqa'i of the southern Zagros:

> Diverse and flexible patterns had always emerged, however, as people made ongoing individual and group decisions to continue, adjust, or change their current modes of livelihood, residence, and lifestyle…Some Qashqa'i lived in tents and practiced only agriculture, while others occupied houses and practiced only pastoralism. Some families divided their labor between pastoral and agricultural ventures and their residences between nomads' camps and fixed settlements. And some Qashqa'i migrated without having any sheep and goats. All these patterns and the more standard ones described above could change on a yearly and even a seasonal basis.
> (Beck 2003: 294)

Above all, we have to concede that our knowledge and understanding of the Bakun period in Fars is rather attenuated, as cogently expressed by Weeks *et al.* (2010: 268):

We do not have a clear idea of the distribution and organization of settlement during the Early, Middle, and Late Bakun phases; neither do we have a clear impression of the subsistence regimes that were in use during the fifth millennium B.C. derived from the analysis of floral and faunal remains; and perhaps most critically, we have little idea of what was transpiring at the largest Bakun-period sites in the Kur River Basin at this time.

The Late Chalcolithic of Fars, 4000–3200 BC: expansion and contraction

The fourth millennium BC saw major socio-economic and political developments across almost all of Iran, and Fars was no exception (Petrie 2013a; Petrie *et al.* 2013). Towards the end of the millennium complex settlement of upland Iran develops at Tal-e Malyan, and there are major changes in ceramic production, distribution and consumption, in food resource exploitation and in patterns of trade and exchange (Zeder 1991). The fourth millennium BC chronology of Fars is set out in Table 6.3. Once more, surveys in and around the Kur river basin are key in approaching this period (Sumner 1988, 1990; Alden 2003a, 2013; Alizadeh 2003b; Roustaei *et al.* 2006; Zeidi *et al.* 2009; Sardari 2013). Of major relevance are excavations at Tal-e Malyan (Sumner 2003), Tal-e Kureh (Alden 2003c), and at sites in the Mamasani area, including Tol-e Spid where a protracted fourth millennium BC sequence has been sampled (Petrie *et al.* 2007) and Tol-e Nurabad (Weeks *et al.* 2009, 2010; Petrie *et al.* 2013). Excavations at Tappeh Mehr Ali in northern Fars are also important (Sardari 2013). Absolute and relative chronologies of the various excavated levels at all these sites are difficult to establish with certainty, partly because of a major plateau in the radiocarbon calibration curve between *c.* 3350 and 2900 BC (Wright 1985; Petrie *et al.* 2013: 172–182; Petrie 2014).

Surveys suggest that settlements of the Lapui period in Fars were generally small villages, less than 2 ha, with no evidence for site hierarchy (Sumner 1988; Potts *et al.* 2005; McCall 2009; Nobari *et al.* 2012b; Potts 2016: 54). Distinctive Lapui red ceramics were found at 108 sites in the Kur river basin, but Sumner's analysis showed a steady drop in settlement numbers through the Lapui period, a decline that continued into the subsequent Banesh period and may have been caused by increased soil salinity from excessive irrigation (Sumner 1988: 29, 1990; Alden 2013). What is clear is that by the end of the Banesh period at *c.* 2800 BC there is a dramatic collapse in settlement across the Kur river basin, with no evidence for sedentary occupation of the region for up to four centuries (de Miroschedji 2003: 19, Figure 3.2), representing a major episode of settlement disjunction coeval with that attested in Khuzestan (see above). We discuss this issue further in Chapter 7.

Villagers of the Lapui period lived in mudbrick and *chineh* houses, with foodstuffs coming mainly from herded goat, sheep, cattle and pig with wheat, barley and lentils as well as high consumption of almond and pistachio (Mashkour 2009; Petrie *et al.* 2013; Sardari 2013). The finding of stamp seals and clay sealings at **Tappeh Mehr Ali** (Figure 6.70) suggests some form of economic organisation related to storage and distribution. There is evidence for site clustering in the Banesh period, associated with the emergence of major occupation at **Tal-i Malyan**, ancient Anshan, which attains some 50 ha in area by the late fourth millennium BC (Chapter 7; Sumner 1986a). The rise to supremacy of Malyan coincides with a major decline in rural settlement, and it is likely that Malyan's population was significantly comprised of villagers who had abandoned their ancient settlements, forcibly or otherwise, to live in the burgeoning settlement there. The role of pastoral nomadism in shaping the trajectory of socio-economic development in Late Chalcolithic Fars is keenly debated (Sumner 1986a, 1988; Abdi 2003b; Alizadeh 2006: 49–50; Alden 2013) but the hard evidence is slight. Also debated is the question of to what extent large settlements such as Malyan can be usefully be characterised as urban, given the dearth of evidence for dense and hierarchically structured populations (Meyer 2019).

Lapui ceramics generally lack surface decoration and show signs of standardisation and product specialisation in their manufacture, including use of a slow wheel or tournette (Blackman 1981, 1989; Petrie 2011; Sumner 2011). These attributes have been associated with "the minimization of energy expenditure and the maximization of the rate of production of individual vessels" (Petrie 2013a: 142), which in turn we may view as related to the emergence

Table 6.3 Fourth millennium BC chronology of Fars and adjacent regions (after Petrie 2014: table 9.1)

Dates cal BC	*Susa Acropole I*	*Tol-e Spid*	*Tol-e Nurabad*	*Tal-e Malyan period*	*Godin Tepe*	*Tappeh Sialk*
3149-2930	Susa IIIA 16-15	TS18?	TNA8-6	Late Middle Banesh	Terminal Godin VI:1	Sialk IV2
3350-3140	Transition 17-17X	TS18?	TNA10-9	Early Middle Banesh	Godin VI:1	Sialk IV1
3650-3350	Susa II 22-18	TS19	TNA12a-11	Initial/Early Banesh	Godin VI:2	Sialk III6-7
4000-3650	Late Susa I 24-23	TS31-20		Lapui	Godin VI:3	Sialk III4-5

Figure 6.70 Rescue excavations at Tappeh Mehr Ali (Sardari 2013: Figure 11) (photo credit: Alireza Sardari).

of a complex political entity at Malyan where an elite group increasingly determined the distribution of the population's labour and capabilities across the full spectrum of crafts and activities. From the Early Banesh phase, the bevelled-rim bowl starts to appear at many sites in Fars and beyond (Potts 2009) but is usually not accompanied by other vessel forms indicative of interaction with Mesopotamia. Initial interpretations of the presence of bevelled-rim bowls on highland Iranian sites as indicative of interest in access to cherished resources on the part of lowland communities from Khuzestan or Mesopotamia (Alden 1982a, 1982b), have been succeeded by ideas about the role of bevelled-rim bowls in spreading culinary fashions such as leavened bread (Potts 2009: 13; Goulder 2010).

The Early Chalcolithic of south-eastern Iran, 5000–4000 BC: Tepe Yahya to the fore

Although south-east Iranian sequences are poorly documented, the evidence from Tepe Yahya and Tal-e Iblis establishes some understanding of the fifth millennium BC (Beale 2011), combined with increasing evidence from survey for a significant Early-Middle Chalcolithic presence in the region south of Jiroft (Pfälzner *et al.* 2019). Recent studies on the Shahdad plain have brought to light new information that calls into question existing views as well as revising the chronology of the region in the Early Chalcolithic. Nasir Eskandari has carried out new research to the west of the Lut desert in the Shahdad area of Kerman province (Eskandari 2017, 2018; Eskandari *et al.* 2017). Within the plain, 13 fifth millennium BC and 15 fourth millennium BC sites have been recognised, the largest of which is Tepe Dehno at 20 ha in area. Excavations at **Tepe Dehno** and **Tepe Dehno East** have revealed levels dating from the early fifth to early third millennia BC. Excavations at Dehno East have identified the earliest periods on the Shahdad plain, establishing that the Iblis I culture dates several centuries earlier than previously thought, to the first half of the fifth millennium BC. Unlike other areas of Iran in the Early Chalcolithic, little administrative evidence of the fifth millennium BC has been recovered in south-eastern Iran. But copper metallurgical evidence (Caldwell 1967; Thornton and Lamberg-Karlovsky 2004) as well as agricultural and irrigation systems suggest the commencement of complex societies at this time in south-eastern Iran. Future fieldwork is needed to shed light on the socio-economic and political aspects of the fifth millennium BC societies of this region.

Further east still, building on the early work of Sir Aurel Stein in the Bampur valley of Baluchistan province (Mutin 2015), systematic survey in this region identified 39 Chalcolithic sites, of both Early and Late Chalcolithic date on the basis of their ceramics, which show transregional connections westwards to Kerman and Tepe Yahya and eastwards to the Kech-Makran region of south-western Pakistan (Mutin *et al.* 2017b). Progressive eastwards movement of Chalcolithic settlement along the Bampur River is likely associated with episodes of environmental change involving drying up of the river.

Much of our, admittedly limited, knowledge about south-eastern Iran in the Early Chalcolithic comes from two excavated sites in Kerman province: Tepe Yahya (Lamberg-Karlovsky and Beale 1986) and Tal-e Iblis (Caldwell and Malik Shahmīrzādī 1966; Caldwell 1967; Sarraf 1981). Surveys in the region have mainly identified Late Chalcolithic sites of the fourth millennium BC (see below; Petrie 2013a: 130). The sequence of excavated levels at **Tepe Yahya** is especially significant for understanding the region and its broader connections. Above the Neolithic occupation of period VII, periods VIB-A at Yahya date to the early/mid-fifth millennium BC, while period VC-A spans the mid-fifth to early fourth millennia BC (Voigt and Dyson 1992: 148–149; Petrie 2013a: 131). At Tal-e Iblis, Chalcolithic occupation spans late sixth to late fifth millennia BC (Voigt and Dyson 1992: 143–146; Petrie 2011, 2013a: 132).

Martha Prickett's (1986a, 1986b) survey of selected regions of Kerman detected significant movement of settlement in the Shah Maran and Dalautabad basin and in the upper Rud-e Gushk. Early Chalcolithic sites are rare but there is evidence for increased settlement spread and for agricultural intensification by the end of the fifth millennium BC. Architecture in level VIB at Yahya shows a major break from the preceding Neolithic levels, with evidence for a new type of building constructed of slender walls of thumb-impressed mudbricks, with corner and external buttresses and raised internal corner hearths (Lamberg-Karlovsky and Beale 1986: 127–129, Figure 6.15). The walls' internal and external faces were plastered with a thick, chaff-tempered mud plaster and interior surfaces were then coated in a much finer plaster. Few artefacts were found on the floors of these rooms but there is a suggestion that some adjacent structures were used as animal pens (Lamberg-Karlovsky and Beale 1986: 127). The succeeding period, VIA, witnesses "one of the most extraordinary and extensive building projects in the whole history of the site" (Lamberg-Karlovsky and Beale 1986: 132). This project involved the construction of massive retaining walls around the mound's summit and the deposit of tons of fist-sized rocks, sherds and bones on the slopes of the mound behind the retaining walls. Multiple smaller retaining walls to contain the rubble were also constructed (Lamberg-Karlovsky and Beale 1986: 132, Figures 6.16–6.18). Thornton's (2010) analysis of a copper awl from Yahya VIA shows it to be one of the earliest examples of smelted arsenical copper from anywhere in the world, dated at *c.* 4300 BC, indicative of the import to Yahya of raw materials for the production of locally-used artefacts, in this case an awl probably used for carving of the chlorite bowls produced so lavishly at Yahya.

The major feat of architectural engineering in Yahya VIA, involving the transport of several tons of small rocks from at least 1 km distant, served as a platform for the overlying period VC building, and it is likely that other buildings were originally constructed on top of this platform (Lamberg-Karlovsky and Beale 1986: 132). The period VC building has a fine plan of multiple rectilinear rooms (Figure 6.71) (Lamberg-Karlovsky and Beale 1986: 140, Figures 6.23–6.24), with use of corner and side buttresses as in the earlier period VIB structure. The plan comprises small square rooms, possibly for storage, with larger rectangular rooms with corner hearths and raised platforms, probably living quarters. All the walls of the *c.* 20 rooms of the period VC building are bonded together, indicating planning and simultaneous construction of the entire complex. Fragments of collapsed roofing show

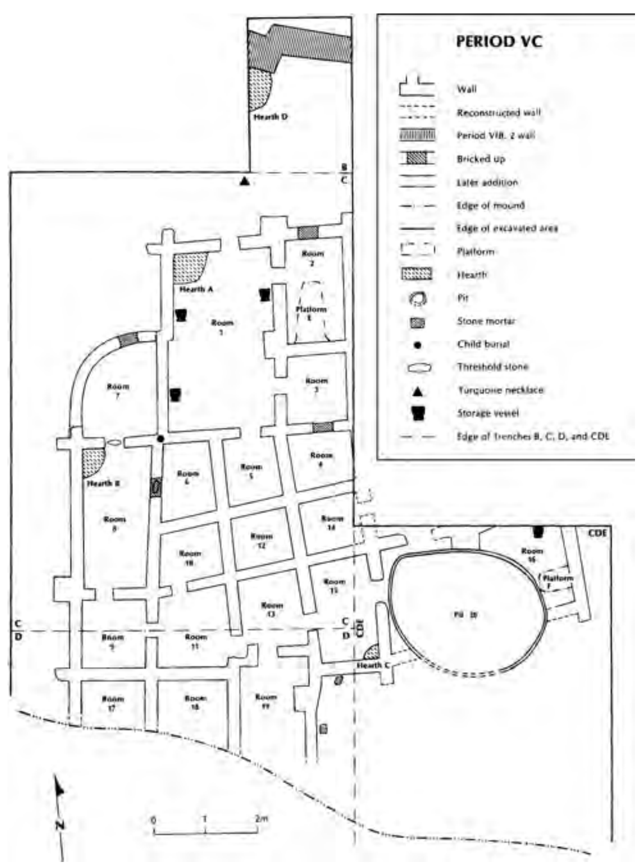

Figure 6.71 Tepe Yahya, period VC architecture (Lamberg-Karlovsky and Beale 1986: Figure 6.23) (permission courtesy of C. C Lamberg-Karlovsky).

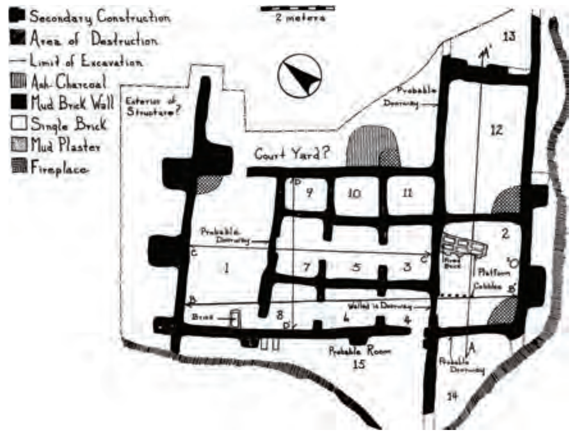

Figure 6.72 Tal-e Iblis, area D architecture (after Evett 1967: Figure 9).

that roofs were constructed of thick mud plaster spread on reeds and branches over larger wooden beams. Again, artefacts within the rooms were very rare, amounting to several chaff-tempered storage jars, with no detectable contents, a single rubber stone and a copper pin (Lamberg-Karlovsky and Beale 1986: 143–146).

In the following VB period, the VC complex was dismantled and this part of the settlement became a large open area with a series of adjacent rooms (Lamberg-Karlovsky and Beale 1986: Figure 6.26). The technique of external buttressing was abandoned in this period. In Yahya period VA, occupation comprises open areas and a pottery kiln (Lamberg-Karlovsky and Beale 1986: 152), following which the site was abandoned for a century or more (Thornton and Lamberg-Karlovsky 2004: Figure 1). Approximately contemporary domestic architecture at **Tal-e Iblis**, 180 km north of Yahya, includes a total of some 50 rooms (Figure 6.72) across four areas of the site (Evett 1967; Lamberg-Karlovsky and Beale 1986: 164) bearing strong similarities to the Yahya structures. One difference is that the Iblis walls are thicker, two courses wide, than the Yahya walls, which enables the rooms to be somewhat larger.

There are two notable human burials from period VB at Yahya. One is of a child in tightly flexed position with grave goods of a lapis lazuli bead, a cattle pelvis, two flint flakes and some sherds. The second burial was deposited within a small mudbrick burial chamber, again of a child in a tightly flexed position, with no grave goods. A further child burial was encountered in period VA (Lamberg-Karlovsky and Beale 1986: 151). No adult burials were found in the Early Chalcolithic levels at Yahya. It is possible then that children were buried within the settlement but adults buried or disposed of somewhere outside the settlement (Lamberg-Karlovsky and Beale 1986: 149). The use of a mudbrick chamber for burial of a child is certainly distinctive, and the Yahya VB one is the earliest example of this rare practice from anywhere in Iran.

Evidence from the Kerman sites suggests increasing technical capabilities in pyrotechnology through the fifth millennium BC (Vandiver 1986; Petrie 2011, 2013a). There are indications of some transregional movement of certain ceramics such as import of black-on-buff ware vessels from Fars into Kerman (Kamilli and Lamberg-Karlovsky 1979; Beale 2011; Mutin 2012: 166–169). Metallurgy in Kerman made steady progress through the fifth and into the fourth millennia BC (Thornton *et al.* 2002; Thornton and Lamberg-Karlovsky 2004; Weeks 2012, 2013b), with increasing quantities of copper artefacts produced by a range of techniques, and at Iblis, significant evidence for copper ore smelting in clay crucibles (Caldwell and Malik Shahmīrzādī 1966; Moorey 1982; Pigott 1999; Pigott and Lechtman 2003; Matthews and Fazeli 2004: 66; Frame 2012).

Cultivated crops from Early Chalcolithic Tepe Yahya comprise barley, wheat, milk vetch, hackberry and grape (Meadow 1986: Table 3.2). In terms of animal exploitation, period VI at Yahya sees a major increase in use of domesticated cattle compared to Neolithic levels, while goat and sheep are also heavily represented. Cattle, goat and sheep together account for more than 98% of all faunal remains from Yahya periods VII-IVC (Meadow 1986: Table 3.4, Figure 3.3). There is some evidence for the presence of zebu cattle (*Bos indicus*), although it is not clear in which period they first appear at Yahya (Meadow 1986: 37).

The Late Chalcolithic of south-eastern Iran, 4000–3200 BC: transregional engagement

The fourth millennium BC of south-eastern Iran is poorly known. Our knowledge of this period is limited to the excavations of Tepe Aliabad (Bardsir), Mahtoutabad in Jiroft, Khaje Askar in Bam and Tepe Dehno (Madjidzadeh and Pittman 2008; Vidale and Desset 2013; Soleimani *et al.* 2016; Eskandari 2017; Moradi 2021). Distinctive ceramics in plain and painted styles enable us to characterise an Aliabad culture that prospered in south-eastern Iran extending over a large area from west of Kerman to the most eastern lands of Iran and into Pakistan (Mutin 2013b). The new absolute chronology of **Tepe Dehno** revises most of the previous studies of the fourth millennium BC archaeology in the Kerman region (Eskandari 2017). The Aliabad culture (= Iblis IV) is an important period in south-eastern Iran spanning *c.* 3900–3300 BC (Eskandari 2018). From the mid-fourth millennium BC cemetery site of **Khaje Askar** nine graves were uncovered with 53 funerary goods including ceramics (Figure 6.73), stone and clay beads, stone vessels, clay objects, shells and a unique metal blade (Soleimani *et al.* 2016).

Tepe Yahya is once more a key site for this period in south-eastern Iran. Period VA sees the re-occupation of Yahya after an abandonment of a century or so. The dating of the VA occupation is debated but probably spans *c.* 4250–3600 BC (Mutin 2013b; Petrie 2013a: 146), while period IVC covers *c.* 3100–2800 BC (see Chapter 7; Dahl *et al.* 2013; Petrie 2013a: 146). Ceramics from Yahya VA demonstrate that the site was situated at a hub of connections across the regions of Kerman and the Bampur valley in the east, while the presence of Lapui ware connects Yahya VA to the regions of Fars and Khuzestan well to the west (Mutin 2012, 2013a: 3). Further evidence for the role of Yahya VA in regional interactions is provided by a major increase in the range and quantity of imported materials attested at the site, including copper, turquoise, limestone and lapis lazuli (Lamberg-Karlovsky and Beale 1986: 266; Mutin 2013a: 3). These Late Chalcolithic transregional connections served to underpin an intensification of regional networks of material and social connectivity in the subsequent Proto-Elamite phase. Following period VA, Yahya was again abandoned, this time for up to 500 years, resettled in the Proto-Elamite period IVC and then abandoned once more (Lamberg-Karlovsky 2001b: 271; Potts 2001: 199).

Tal-e Iblis was occupied through much of the fourth millennium BC (Voigt and Dyson 1992: 143–146), with black-on-red ware and Lapui ware of period II at Iblis indicating participation in large-scale regional interactions, as at Yahya VA. Moreover, the extensive evidence for copper metallurgy at Iblis suggests a scale of production beyond purely local needs (Caldwell 1967; Pigott 1999: 74–77; Thornton 2009), and the presence in level IV at Iblis of Uruk- or Susa-related pottery forms, including bevelled-rim bowls, four-lugged jars and trays, demonstrates connections, in some form, with Late Chalcolithic communities of south-western Iran and Mesopotamia

Figure 6.73 Khaje Askar, ceramic vessels from cemetery (Soleimani *et al.* 2016: Figure 19) (photo credit: Nasir Eskandari).

(Matthews and Fazeli 2004: 66; Mutin 2013a: 4), immediately prior to the Proto-Elamite horizon. Faunal remains from Iblis are dominated by sheep and goat, and there are indications that hunting of gazelle declines through time at the site (Bökönyi 1967).

Survey in the Shah Maran and Daulatabad plains shows a severe decline in settlement in the later fourth millennium BC (Prickett 1986b: 236). At approximately the same time there is a fivefold increase in settlement numbers on the Bard Sir plain (Chase *et al.* 1967). During Yahya IVC, the Proto-Elamite period, only the major site of Yahya and one other site appear to have been occupied (Prickett 1986b: 237), while site numbers increased on the plains south of Jiroft (Pfälzner *et al.* 2019). There is extremely little information on food resources in the Late Chalcolithic of south-eastern Iran, but Meadow's study indicates a resurgence of goat herding and a corresponding decline in cattle use in Yahya period V as compared to the preceding period VI, a trend that continues into Yahya IVC (Meadow 1986: Figure 3.3). The presence of significant foreign components in the material culture of the late fourth millennium BC in south-eastern Iran, and elsewhere, probably betokens major movements of people interacting with surviving local communities, but the details are unclear.

Research in the Halil Rud region, east of Tepe Yahya, has shed new light on the fourth millennium BC of this previously little-explored area. The main information comes from the site of **Mahtoutabad**, close to Konar Sandal South. In the third millennium BC Mahtoutabad was a major burial site for the nearby major centre of Konar Sandal South (Chapter 9), but here we are concerned with its earlier levels, which span much of the fourth millennium BC (Figures 6.74–6.75) (Desset *et al.* 2013; Vidale and Desset 2013). The earliest phase, Mahtoutabad I, extends over *c.* 1.5 ha, and excavations revealed accumulated trampled floors, with bench and fireplaces, of a large semi-subterranean structure measuring at least 9.5 × 8 m. There is also evidence for copper metallurgy and for stone vessel production at Mahtoutabad I, which dates to the early fourth millennium BC. Pottery from this structure includes basins, jars, bowls and footed vases (Figure 6.76) (Vidale and Desset 2013: Figures 13.9–13.15), often with finely executed polychrome painted decoration and manufactured with considerable technical skill. Good parallels for the Mahtoutabad I ceramics can be found to the west in the Shah Maran and Daulatabad plains, but also to the east through the Bampur valley to sites such as Shahi Tump in the Pakistani Makran (Mutin 2013b). Indeed, the broad region of south-eastern Iran during the fourth millennium BC (and during the third millennium BC – see Chapter 9) can only be understood as a participant in transregional socio-cultural interactions between widely separated communities, stretching from Fars in the west to eastern Pakistan in the east. As Benjamin Mutin (2013b: 272) puts it, ceramics from the region in the fourth millennium BC "tend to be indicative of long-span cultural boundaries with fluctuations, and perhaps punctual breaks in some cases and long-span interregional relations."

Mahtoutabad II consists of a series of trampled surfaces lacking architectural features, with ceramics related to Aliabad wares of Iblis IV (Vidale and Desset 2013: 239). Dating to the late fourth millennium BC, Mahtoutabad III comprises Uruk-related ceramics, including multiple bevelled-rim bowls, low-sided trays, flowerpots, spouted jars and bottles and lugged vessels, representing "the easternmost evidence of the Uruk phenomenon across the Iranian plateau" (Vidale 2011; Desset *et al.* 2013: 17; Vidale and Desset 2013: 239). Uruk, or Susa, interest in

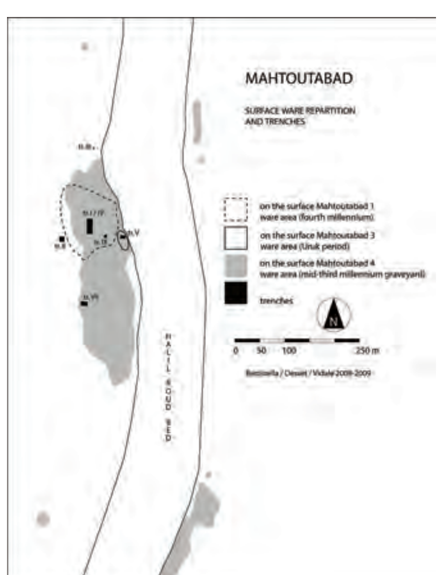

Figure 6.74 Mahtoutabad cemetery, plan of site (Vidale and Desset 2013: Figure 13.4) (image courtesy of Massimo Vidale).

Figure 6.75 Mahtoutabad, excavations in Trench I (Vidale and Desset 2013: Figure 13.6) (photo credit: Massimo Vidale).

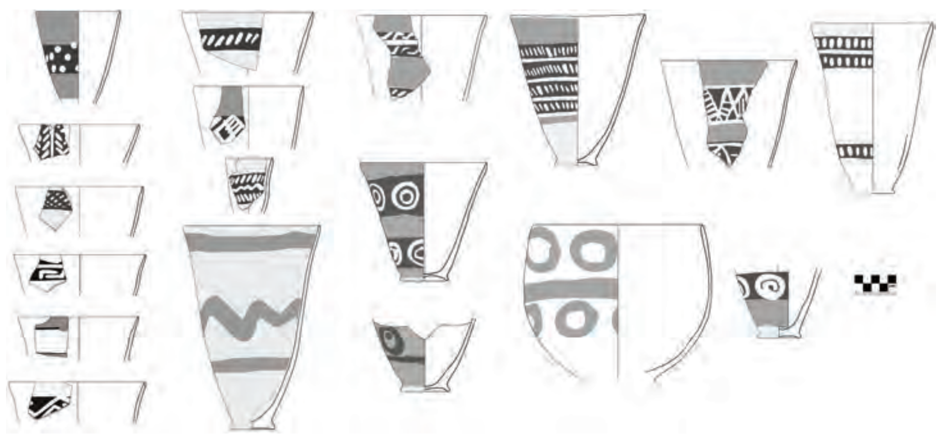

Figure 6.76 Mahtoutabad I, ceramics (image courtesy of Massimo Vidale).

engagement with this distant region of south-eastern Iran, 1000 km east of Khuzestan, may have been stimulated by the local resources and capabilities in copper and alabaster working as attested already in phase I at Mahtoutabad, as discussed above. Like Mahtoutabad, the nearby site of **Hajjiabad-Varamin** also appears to have been occupied through the fourth millennium BC prior to its expansion into a major cemetery by the mid-third millennium BC (Chapter 9) (Eskandari *et al.* 2021).

Chalcolithic kaleidoscope: divergent, fragmented trajectories towards complexity

We have come a long way on our 2,000-year journey through the Chalcolithic period of Iran. At its start in *c.* 5200 BC, the landscapes of Iran hosted dispersed, small-scale farming, herding and hunting communities living in villages situated to take advantage of the diverse range of natural and environmental resources afforded by the country. These early agricultural communities, which had developed over the millennia of the Neolithic (Chapter 5), appear to have lacked significant social stratification with little evidence for socio-economic inequality, as attested by architecture, material culture and burial practices, for example. By the end of the Chalcolithic in the late fourth millennium BC, there is a clear gearshift in both the scale and nature of the societies of Iran, with a wealth of evidence to indicate differential control of, access to, and distribution of a wide range of human and natural resources. Such evidence includes multi-tier settlement hierarchies suggestive of dependent inter-community relationships in terms of food production and control, underpinned by agricultural intensification including irrigation; the commissioning and construction of large-scale architectural structures such as platforms, terraces, and communal buildings, demanding the command, forcible or otherwise, of large labour-pools and huge quantities of building materials including mudbrick, plasters and roofing timber; the development of craft specialisation region by region across Iran as major focal sites intensified both their exploitation of access to specific materials – metals, semi-precious stones, good potting clays and other minerals – and their skills-base and tastes in the working, trading and consumption of finished artefacts; the elaboration and centralisation of cultic practice as attested through monumental religious structures, frequent cultic iconography of seals and seal impressions, and large-scale centralised burial of the dead; and increasing sophistication and reach of bureaucratic control of agricultural and social resources, materialised in the form of tokens, seals, sealed bullae and numerical tablets.

But each region of Iran took its own course, at its own pace and not necessarily in a unilinear fashion, through the pathways to complexity, as we have articulated throughout the regional discussions above, partly formed of course by the regionally differential investment of archaeological investigation. Thus, in **north-western Iran**, the pace of social change was slow and steady through the Chalcolithic, whereby we can trace outlines of transregional connectivity in ceramic styles and exploitation of obsidian sources, for example, accompanying increased focus on agricultural production and animal herding, but as yet without evidence for quantum leaps in societal complexity. Across **north-central Iran**, the pace is somewhat sharper, with a clearer trend toward intensified craft production in ceramics and metallurgy, as attested at Sialk (Figures 6.77–6.78) and sites on the Qazvin and Kashan plains, early construction of specialised buildings and associated burial practices as at Zagheh, and, by the end of the Chalcolithic, an initial engagement of certain communities as at Sialk, Sofalin and Meymanatabad, with the wider Uruk/Late Susa II world of early bureaucracy attested through seals, sealings and numerical tablets. Chalcolithic societies of **north-eastern Iran** are not so well investigated, but here too we detect an intensification of craft production and specialisation, such as the focus on lapis and chlorite working at Hissar, and the elaboration of burial practices also at Hissar. In the Zagros region of **western Iran**, well-connected village communities intensified their farming and herding practices with some indications of seasonal herding according to pasture availability, whilst focusing more attention on sophisticated burial practices as attested in cemetery sites of Luristan. By the Late Chalcolithic, this region of Iran played its part in the transregional world of Uruk/Late Susa II, as attested above all in the finds from Godin Tepe VI:1, which connect the central Zagros both with Khuzestan and Lower Mesopotamia to the southwest and with contemporary sites such as Sialk and Hissar to the east (Figure 6.79). In the Fars region of **southern Iran**, developments are focused on the increased importance of Malyan as a regional centre by the Late Chalcolithic within a context of ongoing village life across these fertile plains. In **south-eastern Iran**, the site of Tepe Yahya is key, with evidence for construction of massive public structures, early metallurgy, and elaboration of burial practices, as also at Mahtoutabad. By the Late Chalcolithic, sites of this region show strong connectivity with contemporary burgeoning societies well to the east in Bampur and the Makran, for example, as well as with the Late Susa II world to the west.

But it is in **south-western Iran**, Khuzestan in particular, where we can delineate the clearest and most dramatic changes in socio-political structures of the Chalcolithic communities of Iran, drawing on earlier discoveries at Susa and Chogha Mish as well as on newly emerging evidence for cultic elaboration at the special site of Tol-e Chega Sofla. Founded in the fertility of the alluvial soils, multi-tiered settlement patterns developed rapidly in this region though not without episodes of disruption. Top-tier settlements such as Chogha Mish show early evidence for sophisticated, large-scale public architecture accompanied by intensified craft production in fields such as chipped stone and ceramics. With the onset of settlement at Susa from the mid-fifth millennium BC the pace of change quickens, starting with elite residences, massive terraces and platforms, through elaborate and extensive burial grounds and highly skilled ceramic production and metal consumption, culminating in the explosion of state-level attributes at Susa and Chogha Mish by the mid-late fourth millennium BC.

A key component of Iran's development towards socio-cultural complexity in the Chalcolithic period was ever-increasing technological capability in a range of skilled and semi-skilled crafts, as illustrated throughout the regional discussions above. Prime amongst these was metallurgy and the exploitation of copper, lead, silver and, more rarely, gold (Moorey 1982; Pigott 1999; Weeks 2004, 2012, 2013b; Thornton 2009, 2010). As Pigott (1999: 79) has stressed, Chalcolithic Iranian metallurgy was focused exclusively on working of native copper and arsenical copper ores, principally through smelting in crucibles. This basic technology stood in good stead for several millennia of the Chalcolithic and Early Bronze Age, with indications from Ghabrestan, Sialk and Hissar of craft specialisation in the production of an increasing range of copper artefacts. Towards the end of the Chalcolithic we encounter the first occurrences of tin-bronze artefacts in Iran, in Sialk IIIB and at Susa (Berthoud *et al.* 1979; Tallon 1987; Pigott 1999: 79; Weeks 2004; Helwing 2009, 2018), which are likely to indicate new eastern trade connections with Afghanistan and its deposits of tin and copper, but significant amounts of tin-bronze objects do not appear until the mid-third millennium BC in deposits such as the "Vase à la Cachette" at Susa (see Chapter 10). Christopher Thornton (2009) has thoughtfully explored the development of metallurgy in highland Iran – a region with ample mineral resources and highly developed cultural traditions – whereby nascent complex societies could readily support craft specialists as they developed their craft initially far in advance of contemporary metallurgy across Southwest Asia.

Figure 6.77 Aerial image of Sialk South Mound (Vidale *et al.* 2018: Figure 5b) (photo credit: Loghman Ahmadzadeh).

These developments in extracting and processing metals are significant not only from a history of technology point of view, but also because of their role in situating the highland zones within a complex transregional dynamic of socio-cultural change that so characterises the entire Chalcolithic period of Iran and its neighbours. The wide distribution of flat copper axes in the late fourth and early third millennia BC, for example, spanning southern Anatolia, northern and central Mesopotamia, and much of Iran (Helwing 2011c: 268), hints at the degree of connectivity between widely spaced communities. As Lloyd Weeks (2013b: 281–282) has stressed, metallurgical

Figure 6.78 Black on buff ceramics from Sialk South Mound (Vidale *et al.* 2018: Figure 6) (photo credit: the National Museum of Iran).

Figure 6.79 The world of the Uruk expansion in the later fourth millennium BC (Sauvage 2020: 36) (image courtesy of Pascal Butterlin and Martin Sauvage).

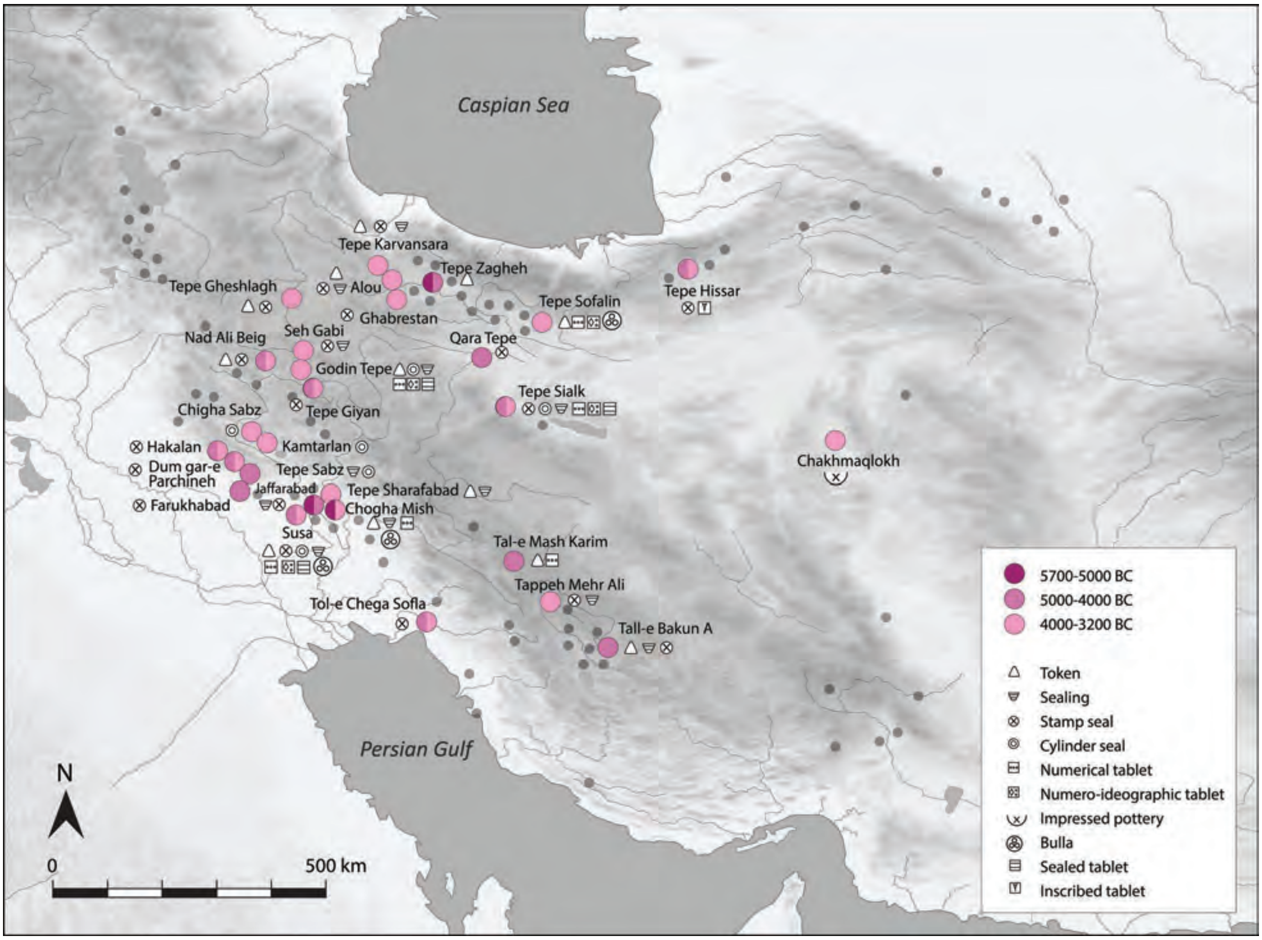

Figure 6.80 Map to show distribution of recording systems across Chalcolithic Iran.

developments in Iran in the fourth millennium BC march very much in step with those of neighbouring resource-rich regions such as Anatolia and Central Asia. Not only cherished artefacts but also technological skills and expertise were moving over considerable distances, and doubtless often across socio-political boundaries, in the Chalcolithic of Iran and its neighbours, even if the precise mechanisms for transmission of technological knowledge may today be obscure. Weeks (2013b) has reasonably suggested that the Uruk expansion, and perhaps the earlier Ubaid cultural phenomenon (Stein 2010), could have provided the sort of large-scale, transregional cultural context within which the transmission of technological skills in metallurgy could be readily effected. These arguments equally apply to other features of Chalcolithic transformations such as the transmission of knowledge and skills in ceramic production, in bureaucratic administration of agricultural and craft activity, in construction of public architecture and all the components of state-level complexity with which much of Iran had become familiar directly or otherwise by *c.* 3200 BC. High degrees of experimentation across much of Chalcolithic Iran in the media, scale and scope of administrative control are amply illustrated in Figure 6.80.

In almost all regions of Iran, Chalcolithic developments were brought to an abrupt halt at some time in the later fourth millennium BC, as attested by site and regional abandonments preceded by destruction levels, doubtless impacted by a significant climatic downturn at *c.* 3200 BC (Jones *et al.* 2013: 25). By the time the dust had settled, literally, and human communities once more occupied the key sites, built their houses, seeded their fertile fields and gathered their thoughts, they continued on their divergent, fragmented pathways through time, but now increasingly impacted by, and engaged in, the transregional sociocultural and economic scenarios of the Bronze Age which, for their full apprehension, necessitate our contextualisation of Iranian societies within ever wider world views. We articulate and pursue these Bronze Age strands of Iran and its neighbours in detail throughout the following chapters.

7 Iran's first state? The Proto-Elamite horizon, 3200–2900 BC

The Early Bronze Age of Iran: regionalisation and interconnection

The later fourth millennium BC was a time of significant disruption across the length and breadth of Iran, from Khuzestan to Kerman and from Fars to Qazvin, characterised archaeologically by abandonment of rural settlements and interruption of social and cultural developments that had been underway for centuries (Vidale *et al.* 2018), as discussed in the preceding chapters. Indications of temporary climatic adversity around this time (Schmidt *et al.* 2011; Walker and Fattahi 2011; Jones 2013) form a plausible context for this disjunction in the archaeological record. In many areas at least the break was brief: within a century or less major sites such as Tepe Sialk, Tepe Yahya and Tal-e Iblis were all re-settled and several new sites were founded, such as Qoli Darvish and Arisman (Helwing 2004, 2005, 2012). But the landscape of settlement had changed: the countryside remained largely devoid of villages and most of the population appears to have been concentrated in regional centres, some of which appear to have been relatively complex in their range of functions and activities. These centres had planned layouts using standardised brick types and building plans, sometimes with surrounding walls, and there is much evidence for continuing development of skills and technology in a range of crafts including ceramics, metallurgy and stone-working, to some extent regionally distributed across Iran according to local availability of valued raw materials such as copper, soft stone and alabaster.

The potter's wheel and copper smelting furnaces enabled major increases in volume of production as well as in the standardisation of output (Petrie 2012; Weeks 2012). With regard to metallurgy of the Iranian highlands, the dominant tradition throughout the entire Bronze Age was the production of arsenical copper from native sources within Iran (Pigott 1999: 81; Helwing 2018; in press-b). Towards the end of the Bronze Age in the mid-second millennium BC, increasing numbers of tin-bronze artefacts occur, but it is not until the later second millennium BC (i.e. the "Early Iron Age"!) that tin-bronze becomes the dominant alloy. The development of craft expertise can be viewed both as a significant indigenous Iranian achievement of the Early Bronze Age but also as an essential component in Iran's engagement with the wider contemporary world, with Mesopotamia to the west and the Indus valley to the east, with the Caucasus to the northwest and Central Asia to the northeast. Trade and exchange had been critical in the construction of social interrelations across and beyond Iran through the Chalcolithic period, as we saw in Chapter 6, and this attribute was further developed through the first centuries of the Early Bronze Age, with thriving regional production centres at the heart of early settlement patterns (T. Potts 1994). But these exchange networks were fragile, prone to disruption and collapse from a range of causes at which we have largely to guess: harassment of traders and travellers by bandits, conflict over taxation and tribute payable to rulers controlling land through which trade caravans passed, seasonal and longer-term climatic variability and shifting social traditions and attachments to cherished materials and commodities. Early Bronze Age Iran was part of a wider world that was sophisticated and intimately networked, but that also hosted dangerous and volatile components.

In this and the next three chapters we treat the various regions of Iran in turn, following threads of cultural connections through time and space, often beyond the borders of Iran, in an aim to articulate the important features of the Early Bronze Age societies of Iran. The map (Figure 7.1) summarises the regional societies of Iran through the Early Bronze Age. It is important to bear in mind that both the chronological and the geographical extents of the Early Bronze Age polities of Iran are uncertain, and much work remains to be done in particular with regard to stratigraphically secure radiocarbon-based chronologies throughout the entire timespan. As Petrie has pointed out (2013b: 16, 2014; in press) the period between *c.* 3400 and 2900 BC is marked by a plateau in the radiocarbon calibration curve, which makes it currently impossible to be precise in the absolute dating of Iran and its neighbours in the later fourth and earlier third millennia BC. In many cases, a value judgement has to be made, and all dates cited in this chapter should be considered as highly provisional. To take an example, some scholars

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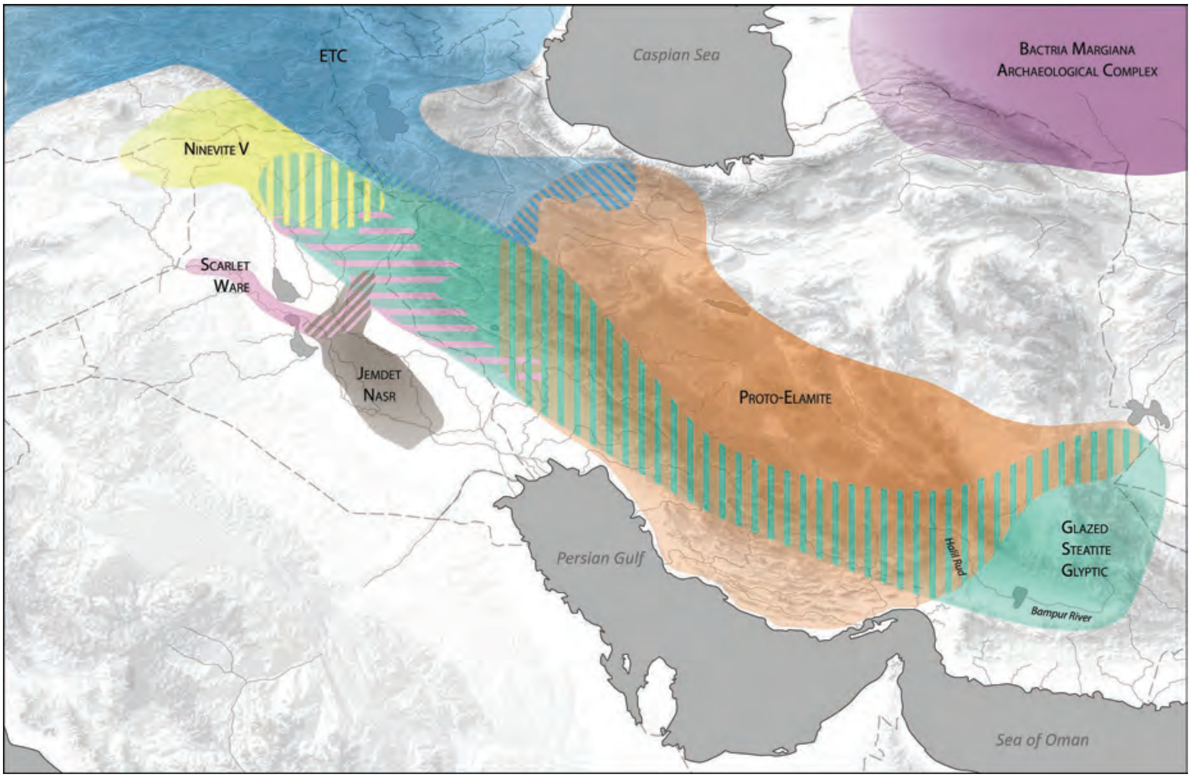

Figure 7.1 Regional cultural zones of Early Bronze Age Iran and its neighbours.

situate the Proto-Elamite horizon within the terminal centuries of the Late Chalcolithic period (Petrie 2013b: Figure 1.3) while others, including the present authors, prefer to view it as largely an Early Bronze Age phenomenon (Abdi 2003a; Mutin 2013a: Table 1.1). Major steps in addressing the third millennium BC chronology of Iran have been taken through research for the soon to be published volume on western Iran within the series Associated Regional Chronologies for the Ancient Near East and Eastern Mediterranean (Helwing in press-a). In this chapter we focus on the Proto-Elamite phenomenon, examining all key sites and issues across Iran, before turning in the next chapter to look at the Early Transcaucasian sphere, which features large in the prehistory of north-western Iran and chronologically overlaps with the Proto-Elamite horizon.

Encountering and defining a cultural phenomenon: the Proto-Elamite horizon

One of the most intriguing socio-cultural phenomena of prehistoric Iran is the so-called Proto-Elamite culture, which has been hailed as "arguably the first indigenous civilization on the Iranian Plateau" as well as "one of the most fascinating, albeit elusive, eras in Iranian archaeology" (Abdi 2003a: 140; Petrie 2013b: 15–18). The geographical extent of the Proto-Elamite phenomenon is immense, its material remains encountered over an area of Iran measuring some 550,000 km^2, even if the relevant cultural material is thinly spread over much of this area (Figure 7.2). Key sites with at least some elements of Proto-Elamite material remains, all discussed below, include Susa, Senjar and Tal-i Ghazir/Tall-e Geser in Khuzestan, Malyan in Fars, Sialk and Arisman in Esfahan, Yahya in Kerman, Qoli Darvish, Ozbaki and Sofalin in central and north-central Iran and Shahr-i Sokhta in Sistan.

In exploring the nature and significance of this phenomenon we need to discuss terminology, as the phrase "Proto-Elamite culture" begs a multitude of questions (Abdi 2003a eloquently traces the changing usages of the term "Proto-Elamite" and forms the basis of this section). The site of **Susa** in Khuzestan is once more critical to the discussion. The Late Uruk-connected society that thrived at Susa during the Late Susa II period was brought to a dramatic end at *c.* 3200 BC, as attested by a sharp break in occupation after level 17A of the Acropole I sounding (Le Brun 1971, 2019; Petrie 2014: see below). This break is followed by a different range of material culture that was initially encountered in excavations on the Susa Acropole by Jacques de Morgan in 1898–1899 in the form of

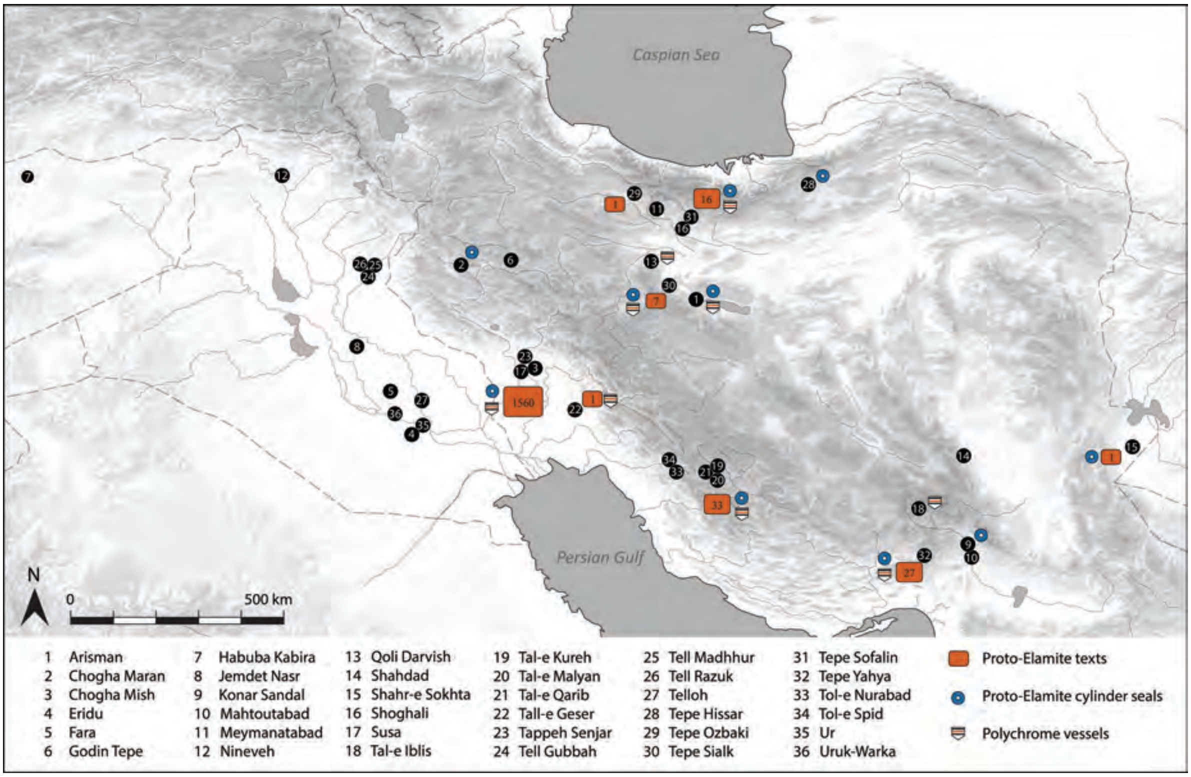

Figure 7.2 Archaeological sites of Proto-Elamite Iran and contemporary Mesopotamia.

two clay tablets, followed by 200 more tablets in 1901 (Abdi 2003a: 142; Dahl 2019: 57–59). The writing on these tablets was recognised by the Susa epigrapher Vincent Scheil (1900, 1905) as differing substantially from that attested on early Mesopotamian or Babylonian texts. Believing there to be a connection to the later Old Elamite writing of the late third and early second millennia BC, and believing Susa to be the epicentre of ancient Elam, Scheil (1905: 60) coined the term "Proto-Elamite" to describe the newly discovered writing style, and he developed the idea of linguistic, ethnic and cultural duality in Elam, later elaborated on by Pierre Amiet (1979b, 1979c), as briefly reviewed in Chapter 6. But other material from the Susa excavations proved difficult to correlate with the epigraphic finds and the precise dating and cultural context of these early texts remained obscure for several decades.

Roman Ghirshman's excavations at **Sialk** near Kashan were critical in establishing the archaeological and chronological contexts of the Proto-Elamite tablets. In 1931 Ghirshman found a single Proto-Elamite tablet along with six cylinder seals and pottery comparable to the Susa II style within a small structure on the south mound. Additionally, adult and infant burials were found, and the whole assemblage defined as Sialk level IV, as at Susa following a short sharp break after the preceding occupation in level III at Sialk (see below). Houses of Late Chalcolithic Sialk III were abandoned, destroyed by fire and succeeded by a new architectural layout, which Ghirshman (1954a: 47) saw as imposed by "brutal conquest" by incomers from Susa. In his comparative studies Ghirshman (1934, 1939, 1954a) attempted to correlate the Proto-Elamite levels at Sialk, and by extension at Susa, with the Jemdet Nasr assemblages excavated in Lower Mesopotamia at the site of Jemdet Nasr itself in the mid-1920s (Langdon 1928; Matthews 2002c). Donald McCown (1949) coined the first archaeological, as opposed to epigraphic, use of the term Proto-Elamite to characterise distinctive materials found at Tall-e Geser (also known as Tal-i Ghazir).

For the next few decades the Proto-Elamite phenomenon was viewed through a Mesopotamian prism, a situation not helped by poor or inadequate publication of relevant excavations in Iran. Excavations at **Tall-e Geser** (Caldwell 1968; Alizadeh 2014) and ongoing investigations at Susa added new material to the mix but did little to clarify the nature of the Proto-Elamite phenomenon until the start of a new programme of research at Susa from the late 1960s onwards. The soundings in Acropole I made headway in establishing a secure chronological sequence at Susa, identifying a layer of ash and debris sealing level 17 (the end of Late Uruk/Late Susa II) before the appearance of Proto-Elamite materials, now known as the Susa III period, which start in Acropole I level 16C and continue until level 13 (Le Brun 1971, 1978; Steve and Gasche 1971).

The next major development in Proto-Elamite studies came with Karl Lamberg-Karlovsky's excavations at **Tepe Yahya** in the Soghun valley of south-eastern Iran, 900 km east of Susa, where level IVC provided much relevant material including architecture, pottery, inscribed clay tablets and cylinder seals (see below; Lamberg-Karlovsky 1970, 1971, 1972; Potts 2001; full final publication in Mutin 2013a). Lamberg-Karlovsky continued, however, to view the excavated materials of Yahya IVC through the Jemdet Nasr prism, identifying only the inscribed tablets as "Proto-Elamite" and the rest of the material culture as "unequivocally tied to Jemdet Nasr Mesopotamia" (Lamberg-Karlovsky 1975: 296; Abdi 2003a: 151). Later, Lamberg-Karlovsky (1978) proposed the idea of a strong Proto-Elamite state developing in Susiana after the collapse of Late Uruk/Late Susa II influence, with the establishment of colonial outposts, including scribes, at regional centres such as Tepe Yahya and Tepe Sialk in order to control movement of valued materials and resources.

The significance of trade in underpinning the wide geographical spread of the Proto-Elamite phenomenon was further elaborated in the stimulating work of John Alden (1973, 1982b), who postulated a role for Proto-Elamite agents as "wholesalers" securing goods and materials from local producers on behalf of "retailers," who procured those goods from the wholesalers and passed them on to consumers. In other words, Proto-Elamite agents were serving as intermediaries in a vast network of commodity movement and exchange reaching across the entire Iranian plateau and with impact well beyond, on the premise that "political decisions made by ruling elites were at least in some instances determined by economic motives and that these same decisions resulted in movements of populations, ideas, and material goods across large areas of the Middle East" (Alden 1982b: 613). Fittingly in this scenario, Alden and Minc's (2016) more recent analysis of clays used in Proto-Elamite ceramics suggested a role for itinerant potters in creating and sustaining technological connections across the Proto-Elamite world. The finding in 1975 of a Proto-Elamite tablet and seals at Shahr-i Sokhta close to Afghanistan in Sistan further emphasised the broad geographical scope of Proto-Elamite engagement (see below; Tosi 1976: 168; Biscione *et al.* 1977; Amiet and Tosi 1978). In a classic article, Lamberg-Karlovsky and Tosi (1973) attempted to interpret the emerging picture from their excavations at Yahya and Shahr-i Sokhta within the framework of "interaction spheres," whereby various components of the archaeological record from sites and regions could be viewed as indicative of shifting spheres or planes of interaction across geographical, political, economic, technological and other relational domains (see also Mutin 2013a).

William Sumner's survey of the Kur river basin in Fars distinguished material, pottery in particular, that seemed to include Proto-Elamite attributes, and that was assigned to a period called Banesh after a village on the edge of the Marvdasht plain (Sumner 1972; Abdi 2003a: 148). The survey was followed by a major programme of excavations at **Tal-i Malyan**, the largest site of the region, which proved to be the Elamite capital city of Anshan (Hansman 1972) and that yielded levels rich in Proto-Elamite materials, including inscribed tablets (see below; Sumner 1974, 1976, 2003). A massive city wall was built around Malyan in the later Proto-Elamite period and there is much evidence for craft production and administrative activity.

Drawing on this information, new syntheses of the Proto-Elamite phenomenon appeared through the late 1970s and 1980s, including major works by Alden (1982b), Amiet (1979b, 1979c), Carter (1984: 115–132); Lamberg-Karlovsky (1985, 1989, 1996), Dittmann (1986a, 1986b, 1987) and Sumner (1986a). Amiet in particular stressed the highland orientation of the Proto-Elamites, proposing that the Uruk Mesopotamian episode of Late Susa II times at Susa could be viewed as an interruption to a long sequence of largely indigenous socio-cultural development. Amiet (1979b, 1979c) saw the Proto-Elamites as heirs to the Susa I tradition of Susiana who re-established their supremacy over Khuzestan and Luristan after the collapse of Late Uruk influence at about 3200 BC before spreading their impact across the Iranian plateau. Amiet also attributed the collapse of the Proto-Elamite state, as he saw it, to another round of military conquest by Mesopotamians from the west. Sumner's (1986a) interpretation, by contrast, connected the rise of the Proto-Elamite state to local developments in Fars, and in particular to the rise to power of pastoral nomadic groups who came to dominate local villages and to establish themselves in tribal bases of which Malyan became the supreme example. More recently, new syntheses and interpretations of the Proto-Elamite phenomenon have been assayed, either starting from detailed analysis of important sites such as Tepe Yahya (Mutin 2013a) or reviewing the evidence for particular material attributes such as seals (Pittman 1994) or inscribed clay tablets (Desset 2012, 2016; Dahl *et al.* 2013). Excavations by Iranian archaeologists at a number of important Proto-Elamite sites, including **Senjar** in Susiana (Sardari and Attarpour 2019), **Sofalin** and **Shoghali** on the Reyy Plain near Tehran (Hessari and Yousefi Zoshk 2013) and **Qoli Darvish** near Qom (Sarlak 2011; Alizadeh *et al.* 2013b) have contributed significant new evidence regarding the extent and nature of the Proto-Elamite cultural phenomenon.

As Kamyar Abdi (2003a: 150, 2012: 24) neatly summarises, the term "Proto-Elamite" has been applied to a range of material and associational attributes: to a special type of inscribed clay tablet and to its script, to a glyptic style and to a variety of material associated with such finds including pottery. We follow here Abdi's (2003a:

150) suggestion in using the phrase "Proto-Elamite horizon' to describe the phenomenon (his other term, "Proto-Elamite sphere," is also apposite - Abdi 2012: 24), characterised by an assemblage of material culture traits that includes tablets, seals and seal impressions, at least, which may occur in a range of otherwise locally-situated material culture assemblages depending on geographical location.

Proto-Elamite chronology: a thorny but important issue

The chronology of the Proto-Elamite horizon has been much debated, generally on the basis of inadequate numbers of, or insufficiently accurate, radiocarbon dates. While recent reviews tend to situate Proto-Elamite sites within a time range of approximately 3200–2800 BC (Wright and Rupley 2001; Mutin 2013a: 7; Petrie 2013b; Pollard *et al.* 2013; Alden and Petrie 2015), we note Jacob Dahl's (2019: 56) view that the Proto-Elamite script, a fundamental attribute of the Proto-Elamite phenomenon, was in use for only some 200 years between 3100–2900 BC (or "within the span of a small number of scribal generations" Dahl *et al.* 2013: 375), thus contemporary with much of the Jemdet Nasr and Early Dynastic I periods in Lower Mesopotamia, the Early Ninevite 5 period in Upper Mesopotamia and, most significantly, with some of the Early Transcaucasian Culture (ETC) as attested across north-western and western Iran and fully explored in Chapter 8. Proposals that the earliest phases of the Proto-Elamite horizon overlap with the Late Uruk/Late Susa II period in Lower Mesopotamia and Susiana (Helwing 2011a: 219; Desset 2014a, 2016; Petrie 2014: 150) are not denied, or confirmed, by the available radiocarbon dates, either from Uruk or from Proto-Elamite sites, although at Susa at least the transition from one period to the other is abrupt and marked by a (short?) hiatus (see below). A key issue is the potentially variable chronologies of differing cultural attributes of the Proto-Elamite world. Thus, while it seems clear that some excavated Proto-Elamite ceramic assemblages, as at Arisman Area C (Helwing 2011a), chronologically overlap with Uruk/Late Susa II assemblages elsewhere, the evidence for an overlap of Proto-Elamite texts with Mesopotamian proto-cuneiform texts of pre-Uruk III (= pre-Jemdet Nasr) date is less convincing, in particular in view of the Susa evidence discussed below (but see Desset 2016).

While radiocarbon dates from Malyan on samples recovered in association with Proto-Elamite tablets allow for the possibility of a start date of 3300 BC (or 3100 BC) for the Proto-Elamite phenomenon (Desset 2016: Figure 26), the plateau in the calibration curve spanning 3400 to 2900 BC makes further precision elusive (Dahl *et al.* 2013: 363–365; Petrie 2014). The dating issue is important because the current brackets of uncertainty allow for two differing scenarios: (1). Proto-Elamite writing developed independently of, and coterminously with, Uruk IV proto-cuneiform writing as attested exclusively at Uruk in Lower Mesopotamia, an argument astutely articulated by François Desset (2016), and (2). Proto-Elamite writing is later than Uruk IV proto-cuneiform and is to some extent derivative from it in various structural and functional ways, an interpretation that can fairly be called the received wisdom (most recently, Dahl in press). In order to address this and many other issues, let us now turn to examine the material evidence itself, beginning with the ever-important site of Susa.

Susa in the Susa IIIA period: disjunction and continuity

Following the collapse at *c.* 3200 BC of its episode of Mesopotamian engagement, **Susa** entered a period of renewed connections with highland elements. But the precise role of Susa in the generation and dissemination of the Proto-Elamite horizon is a subject of considerable debate. Some authorities argue that, in Amiet's words, "Susa was annexed by Anshan" (Amiet 1992: 4, 1993: 25, where Anshan = Tal-i Malyan in Fars) while others, notably Daniel Potts, contend that "the notion of Tal-i Malyan literally annexing Susa must be rejected out of hand" (Potts 2016: 77). What is the basis of these conflicting views and how can they be reconciled, if at all? Amiet's argument appears to relate to the fact that Susa was much smaller than Tal-i Malyan/Anshan at *c.* 3000 BC, and to the highland origins of many elements of Susa III material culture. Despite its smaller size, Amiet sees a role for Susa in contributing to the formation and distribution of "the new civilization" as he calls it, because of Susa's long-standing significance in cultural development in Khuzestan and beyond (Amiet 1992: 4). Potts' argument stresses the evidence for cultural and administrative vitality at Susa in the Susa III period, attested in the large quantities and volumes of animals and agricultural produce recorded in the Susa Proto-Elamite texts, much larger than those recorded in contemporary texts from highland sites (Potts 2016: 77).

What, then, does the Proto-Elamite evidence from Susa tell us about the nature of the site during Susa III? Alden (1982b: 617–618, 1987: 157) estimated that occupation at Susa shrank from *c.* 25 ha in the Late Uruk-related Susa II period (Chapter 6) to 10–11 ha in the Proto-Elamite Susa IIIA period, but Schacht (1987) and Dittmann (1987) estimate Susa to have occupation over some 30 ha at this time, at least as extensive as during the Susa II period (Zalaghi 2019). As mentioned above, at Susa a layer of ash and debris, termed level 17A by the excavator

(Le Brun 1971: 210–211; Petrie 2014: Figure 9.2), seals the buildings of level 17B in the Acropole I sounding at Susa. The 17B buildings appear to have been allowed to stand and decay for an unknown length of time prior to their levelling and filling with debris and ash (Dyson 1987: 648), which suggests an episode of abandonment at least of this part of Susa at the very end of the Late Uruk/Late Susa II period. This hiatus has been dubbed Susa Acropole I level 17X, and matches in time with evidence for the final collapse and abandonment of the *haute terrasse* at Susa (Steve and Gasche 1971: 10; Canal 1978a: 50; Carter 1984: 117; Dyson 1987: 649), as well as with the complete abandonment of Chogha Mish which, unlike Susa, was not re-occupied in the Proto-Elamite period (Alizadeh 2008: 24). Robert Dyson designates the period of time represented by the Susa 17X hiatus as "Proto-Elamite transitional" and, on the basis of radiocarbon dates from Tepe Hissar and Godin Tepe, he dates this episode to a range of 3350–3140 BC (Dyson 1987: 650; Mutin 2013a: 8). Also on the Acropole there is evidence for a Susa IIIA addition to the northern edge of the Susa A platform (Chapter 6) in the form of a substantial wall or reconstructed facade of *Riemchen* brick (rectangular bricks, with square cross-section), which may indicate ongoing influence at Susa from Lower Mesopotamia after the Late Uruk collapse, as *Riemchen* bricks are distinctive of Late Uruk/Jemdet Nasr architecture (Alden 1987: 158).

Further Proto-Elamite materials, including ceramics, seals and sealings, an uninscribed tablet with lion seal impression and a well-furnished human burial come from the Ville Royal I excavations at Susa (Carter 1980). Dittmann's intricate analysis of the Susa material suggests that the initial Proto-Elamite settlement at Susa was restricted to the Acropole mound, with expansion across almost the whole site in the later phases of the Susa III period (Dittmann 1986a: 183, 1986b: 347, 1987). Proto-Elamite materials continue to occur until Acropole I levels 14A-13, Susa IIIB and IIIC (Carter 1978, 1980), but mixed with increasing quantities of ceramics with Early Dynastic I Mesopotamian parallels (Voigt and Dyson 1992: 133).

Several authors have stated that the new buildings at Susa of level 16 have a different orientation from those of level 17B on top of which they stand (Dyson 1987: 648; Mutin 2013a: 21), but comparison of the architectural plans for levels 18, 17B and 16C (Figure 7.3) clearly shows continuity in building orientation even if level 16C is separated from level 17B by layers of debris and baked brick paving, as is clear from the Acropole I section drawing (Figure 7.4). Pittman (1994: 90, fn 51) points to similarities in the architectural layout of Susa Acropole I levels 16–15B with those of Godin Tepe VI:1 (Chapter 6) and Building level III, room 2, at Malyan, with use of double doors and the location of hearths along the long wall of each room, an idea elaborated by Desset (2014). Other clear distinctions in the level 16 material at Susa are an almost completely new ceramic assemblage showing strong connections to the Middle Banesh material of Malyan and Fars (Le Brun 1978; Dittmann 1986a; Dyson 1987: 648; Voigt and Dyson 1992: 133; Sumner 2011), and of course the appearance of texts written in a new script, Proto-Elamite, along with the use of new styles in glyptic and small-scale sculpture in the round (Dittmann 1986b; Pittman 1992b). These are all major changes in direction of the material culture of Susa in the late fourth millennium BC, although Pittman (2013b: 327) points to a notable increase in depictions of animals on seals and seal impressions from Susa Acropole I level 17 as a precursor to the dominance of animals in Proto-Elamite glyptic of level 16. Other indications of continuity from Late Susa II into Susa III include the ongoing use of bevelled-rim bowls and low-sided trays at Susa and at other Proto-Elamite sites across the plateau, including Malyan (Nicholas 1987), suggesting a continued consumption of, perhaps, leavened bread baked in bevelled-rim bowls

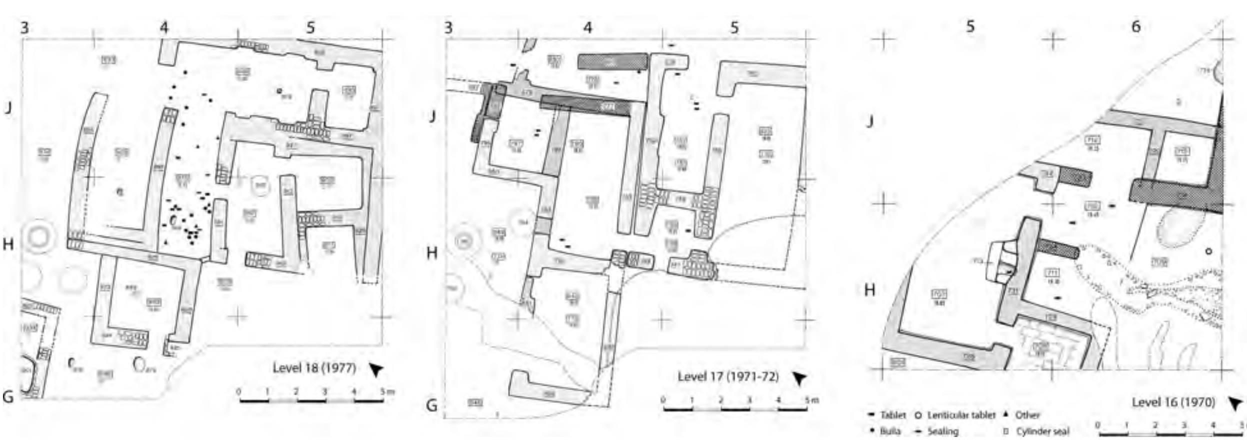

Figure 7.3 Susa, plans of architecture in Acropole I levels 18, 17B and 16C (after Dahl *et al.* 2013: Figure 18.3).

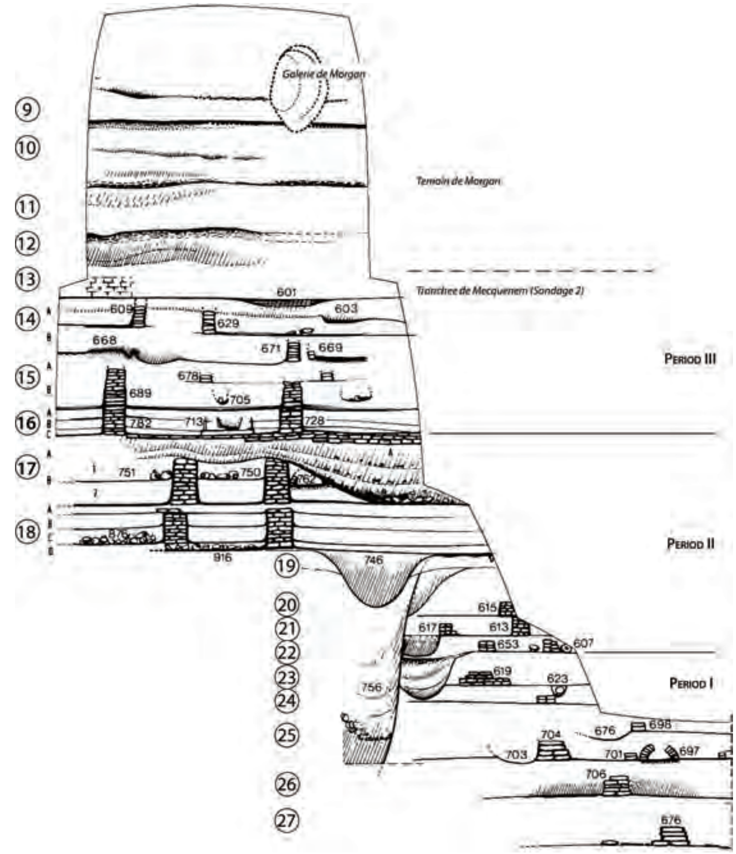

Figure 7.4 Susa, Acropole I stratigraphic section (after Dahl *et al.* 2013: Figure 18.2).

(Potts 2009), a type of flat bread baked in low-sided trays (Mutin 2013a: 192), and other cuisine associated with the spread of Uruk/Late Susa II influence in the immediately preceding centuries.

But those ceramic forms *exclusive* to the Jemdet Nasr period as excavated at Mesopotamian sites such as Jemdet Nasr, Uqair, Uruk, Ur, Nippur, Fara and Khafajah, including solid stands, cut-rim conical bowls, single-lugged round-based jars, and other specific forms of jars (Matthews 1992: 17), are not found in the Proto-Elamite levels at Susa (*pace* Álvarez-Mon 2020: 75). The introduction of Jemdet Nasr phraseology into Iranian archaeology has not been helpful. The problem is that the 1920s excavations at Jemdet Nasr, poorly conducted and published even by the standards of the times, unwittingly recovered ceramics and other materials spanning several centuries of the later fourth and early third millennia BC, i.e. including the Late Uruk, Jemdet Nasr and Early Dynastic I periods. These mixed assemblages have been misleadingly used as comparanda in assigning Iranian materials to the Jemdet Nasr period. Stratigraphically controlled excavations at Jemdet Nasr in the 1980s (Matthews 1989, 1990) recovered ceramics and other artefacts from each of the episodes of occupation at the site and began to define ceramic attributes unique to the Jemdet Nasr period, which is likely to have lasted only 100–150 years (Matthews 1992, 2002c). This work also enabled the definition of the geographic extent of truly Jemdet Nasr material culture that is restricted to sites in the Lower Diyala and Hamrin regions of eastern Iraq and the plains of Lower Mesopotamia southwards from Baghdad. Assemblages from Iranian sites cited as "Jemdet Nasr" or "Uruk-Jemdet Nasr," as at Susa (Steve and Gasche 1971: pls 26–33, 83–85) or Tepe Yahya (see below), do not include any of the ceramic or other artefactual forms unique to the Jemdet Nasr period, and attest either ongoing Uruk/Late Susa II or nascent Early Dynastic I connections, a point meticulously arrived at in Benjamin Mutin's (2013a: 82–83) superb publication of ceramics from Yahya level IVC, as discussed below. The absence of true Jemdet Nasr materials from Iranian sites suggests a significant break in Lower Mesopotamia-Susiana relations at this point, prior to and including the Jemdet Nasr period and coterminous with at least part of the Proto-Elamite horizon, fitting with the major reorientation of cultural alignment otherwise so evident at Susa and beyond.

Outside Susa, occupation of much of the Susiana plain was also at a minimum during the Susa III period. John Alden (1987: 159; Zalaghi 2019) reports some 30 sites with Susa III material but the majority are small and with only a few sherds diagnostic of Susa III. Alden (1987: 160) summarises the human occupation of the Susiana plain in the Susa III period thus: "The settled population of the Susiana Plain was very small in size and concentrated in a single small town [i.e. Susa]. Most of the other sites were small and were either occupied for brief periods or visited only sporadically." Furthermore, Alden (1987: 161) suggests that the late fourth millennium BC decline in population across the Susiana plain can be accounted for by migration of Susiana people, both westwards into Lower Mesopotamia during the Middle and Late Uruk periods and eastwards into Fars and highland Iran during the Late Uruk/Late Susa II and Susa III periods. An explanation for these large-scale population movements needs to address possible socio-political causes, which are likely to comprise an atmosphere of conflict and instability existing between the Proto-Elamite state, if state it were, and its increasingly powerful Mesopotamian neighbours to the west (see Chapter 10 for more on third millennium BC Iran–Mesopotamia interactions).

Writing and sealing at Susa in the Susa IIIA period

> Proto-Elamite is unique among the earliest Near Eastern scripts in that it disappeared without leaving behind a successor script. This fact has influenced attempts at decipherment. Proto-Elamite therefore represents a unique case of early derived script invention, autonomous development, and sudden abandonment of writing, with great potential for the study of the mechanisms behind the invention, early use of, diffusion and, ultimately, death of writing systems.
>
> (Dahl 2019: 56)

These eloquent words from a scholar leading the attempt to decipher one of the ancient world's last undeciphered, and earliest, written scripts neatly set out the significance of the Proto-Elamite script for the study of issues of broader relevance, all of which we consider in our discussions below.

A total of *c.* 1560 clay tablets and tablet fragments of Proto-Elamite type, also known as Susa III texts, have been found in excavations in the Acropole I sounding and, to a much lesser extent, in the Ville Royale sounding at Susa (Potts 1999: 74, 2016: 68; Englund 2004: 143; Dahl 2009: 24, 2012, 2019; Dahl *et al.* 2013). The Susa assemblage of texts is by far the largest text corpus from any Proto-Elamite site: all other assemblages added together comprise fewer than 100 texts (Figure 7.2) (Potts 1999: 81; Desset 2016: 69; Dahl 2019: 61). The major concern with the Susa Proto-Elamite texts is the fact that the vast majority of them were found in early twentieth-century excavations, which failed to identify and record their archaeological contexts with precision (Dahl 2005b, 2013: 235). Scheil's (1923: i) statement that many of the Susa Proto-Elamite tablets were found in large lots might indicate that they formed coherent groups of texts, even archives, at least until the moment when they were excavated and their contexts and associations were destroyed forever. In fact, only 23 Proto-Elamite texts were found during the 1970s excavations at Susa – all the others come from the early twentieth century excavations (Dahl 2012: 8). Assemblages of texts from other sites, such as Malyan and Yahya, fare much better in that regard (Damerow and Englund 1989).

Any attempt to interpret the Proto-Elamite texts, let alone to decipher their language, has to start and end with the Susa corpus (much of which can be directly viewed at the excellent resource: https://cdli.ucla.edu/collections/nmi/nmi_en.html, and see Dahl 2019). We know that Proto-Elamite texts are to be read from right to left, starting at the top of the obverse of the tablet and continuing onto the reverse. The obverse of a text usually comprises a series of entries while the reverse often provides a summation of those entries (Stolper 1992a: 77–78), as with proto-cuneiform texts from Uruk (Damerow and Englund 1989: 12). As a note, we strongly feel that all Proto-Elamite texts, and indeed all proto-cuneiform texts, should be portrayed in publications with their original orientation, as depicted here (Figure 7.5). We eschew the Assyriological convention which rotates all early texts, including Proto-Elamite and proto-cuneiform ones (Dahl 2012: 4), by 90 degrees counter-clockwise in order to align them with Akkadian texts of much later periods when indeed their orientation had changed. Inappropriate reorientation of the early texts obscures the vertical symmetry of many early signs, turns cylinder seal scenes onto their sides, and ruins the structural logic and visual impact that early texts clearly would have had for the scribes and for text readers, including us today (for further discussion of this point, see Damerow and Englund 1989: 11, fn 30). We can also see that almost all Proto-Elamite texts contain sequences of number signs, many of them comparable to those in Uruk IV/Late Susa II texts (see below), and therefore are mainly concerned with counting and recording things. In fact, only two Proto-Elamite texts, both from Susa, appear to be metro-mathematical school texts (Dahl 2009: 24).

Thus, while only moderate progress has been made in decoding the substantive meaning of the Proto-Elamite script, and no proof of a connection to later Old Elamite script has been established, major steps have been taken

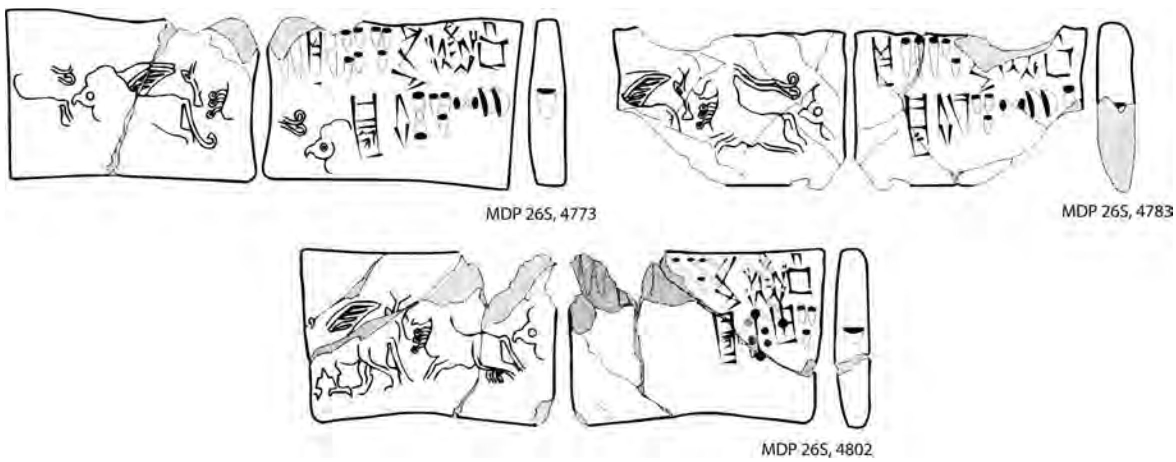

Figure 7.5 Proto-Elamite tablets from Susa (MDP 26S 4774, MDP 26S 4783, MDP 26S 4802) (after Dahl 2012: Figure 4).

in establishing the texts' role as exclusively administrative documents and in demonstrating that most of the numerical systems employed in the Proto-Elamite texts "were either identical to or else derived from the systems found in the proto-cuneiform texts from Uruk" (Potts 1999: 75). Key stages in this realisation were developed by the mathematician Jöran Friberg (1978), by Peter Damerow and Robert Englund (1989; Englund 2004) and elaborated by Jacob Dahl (2019). Furthermore, at least one of the Proto-Elamite counting systems, the grain capacity system, was already in use on numerical tablets at Susa in Late Susa II times (Desset 2016: Figure 27). Like the bevelled-rim bowls and the low-sided trays, the continued use of certain numerical systems from Susa II into Susa III indicates a continuity of socio-cultural practice in the face of dramatic change in many other aspects of life.

An alternative proposal by François Desset (2012: 74–79, 2016: 76) is that the many points of similarity between proto-cuneiform and Proto-Elamite numerical systems are due solely to their shared derivation from a common ancestor, namely the numerical and numero-ideographic tablets found at Susa, Godin Tepe, Tepe Hissar and a range of other sites (Chapter 6). In fact, these interpretations are not mutually exclusive as Proto-Elamite scribes could have incorporated knowledge from both the numero-ideographic and proto-cuneiform traditions at the same time. As discussed above, however, the absolute chronology of this period allows for both the independent development of Proto-Elamite writing in concert with proto-cuneiform and for the structural derivation of one from the other. But the archaeological materials associated separately with proto-cuneiform and Proto-Elamite tablets, in the form of ceramic and glyptic assemblages (Dahl *et al.* 2013: 364), argue for the chronological primacy of Uruk IV proto-cuneiform writing, and for the contemporaneity of Uruk III/Jemdet Nasr proto-cuneiform writing with Proto-Elamite writing at precisely the time when the ceramics and the glyptic iconographies from Lower Mesopotamia and Proto-Elamite Iran take distinctly divergent paths.

Overall, seven categories of counting system are attested on the Susa Proto-Elamite texts, in contrast to 13 numerical systems attested in proto-cuneiform texts at Uruk: sexagesimal system S (for recording a range of discrete inanimate objects); a decimal system D (for recording low-status animate objects including domesticated animals and human labourers/slaves); bisexagesimal system B (for recording grain products possibly dispensed as rations); bisexagesimal system B# (for recording rations of an unclear nature); capacity system C (for recording capacity measures of grain, barley in particular); capacity system C# (for recording unclear items); capacity system C" (for recording capacity measures of emmer wheat) (Figure 7.6) (Damerow and Englund 1989: 22–28; Englund 2004; Chrisomalis 2010: 239–241; Dahl 2013: 247–248, 2019: Figure 9; Desset 2016: 76–78). Of these broad categories, only the decimal system is not found in contemporary proto-cuneiform texts of Lower Mesopotamia of so-called Uruk III type, as attested at sites such as Uruk and Jemdet Nasr at *c.* 3100 BC (Damerow and Englund 1989: 24; Englund and Grégoire 1991). Damerow and Englund (1989: 28) argue that the Proto-Elamite decimal system was a later addition to a suite of counting systems that were otherwise adopted and adapted from the pre-existing proto-cuneiform tradition of Late Uruk/Late Susa II times. There is also a suggestion of a simple time notation system attested on the edges of Proto-Elamite texts (Dahl 2013: 245), and there are corner marks on several texts that may relate to how the tablets were stored and catalogued (Dahl 2012: 8).

Looking at the individual signs utilised by Proto-Elamite scribes, there are some 1,900 discrete signs built around *c.* 500 basic forms, several of which have clear proto-cuneiform ancestry (Glassner 2018: Figure 22.2). As Englund notes (2004: 140), however, more than 1,000 of the 1,900 signs are attested only once (hapaxes or

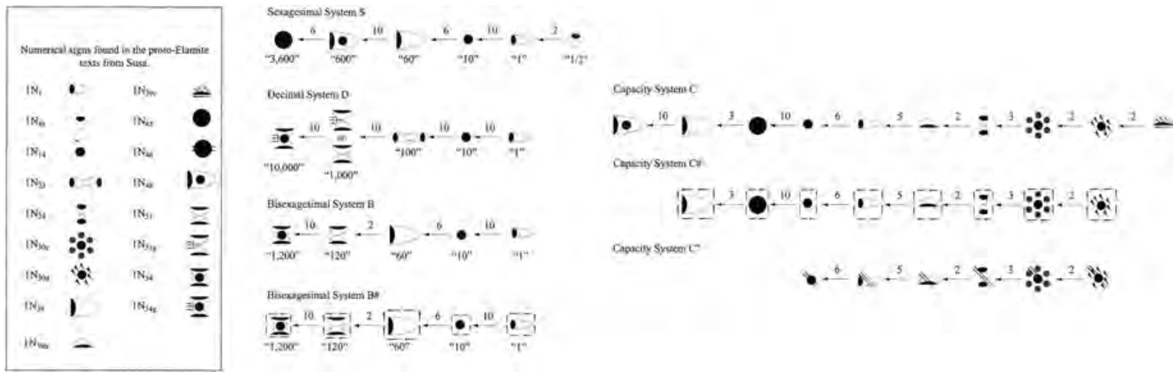

Figure 7.6 Numerical systems in Proto-Elamite texts (after Dahl 2019: Figure 9).

"singletons") and another 300 of them only twice in the entire Proto-Elamite corpus, which leaves *c.* 600 core signs that occur three or more times in the corpus. Only 16 signs occur more than 100 times each (Figure 7.7) (Dahl 2002, 2005a). The signs doubtless comprise a mix of ideograms (concepts), logograms (words) and syllabograms (syllables). All these attributes indicate that the Proto-Elamite script did not exist long enough for a rigorous scribal tradition to develop, a critical factor in its failure to survive the political collapse of the Proto-Elamite world. They also suggest that the Proto-Elamite texts served principally as "mnemonic devices" circulating within a restricted cadre of scribes or individuals (Dahl 2019: 67).

More significant than the question of whether the Proto-Elamite practice of writing was indigenously developed at Susa, in highland Iran, or derived from Lower Mesopotamian precursors, or a mix of all the above, is what the widespread evidence for such a practice tells us about Proto-Elamite society and administration. The fact that several of the Susa III texts from Susa deal with extremely large quantities of animals, 23,600 individual animals in one text, and with large volumes of grain, 17,100 units in one text, suggests that Susa played a key role in the organisation and administration of the rural economy. Another text records a total of at least 1,774 slaves or low-grade workers, male and female (Damerow and Englund 1989: 57, fn 157), which gives some indication of the labour pool at Susa's disposal. It is hard to associate this evidence with suggestions of a decline in importance for Susa in the Proto-Elamite horizon. John Alden, for example, has described Susa in the Susa III period as a "port-of-trade, a weak but independent location where highland resources were exchanged for the products of Sumerian society" (Alden 1982b: 624), a development of his view of Proto-Elamite communities as "wholesalers" and intermediaries in networks of economic interaction (Alden 1973). Against Alden's argument is the stark fact that the Susa III texts, from Susa and from other Proto-Elamite sites across Iran, do not appear to make any mention of exploitable resources of the

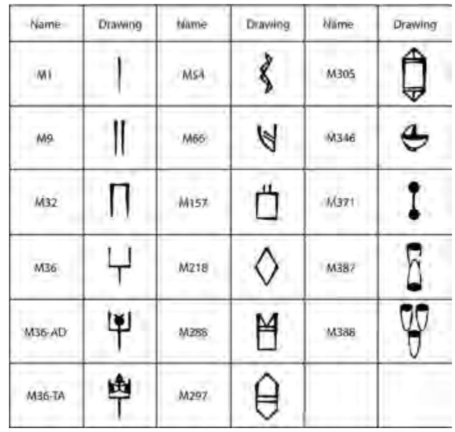

Figure 7.7 Most commonly occurring Proto-Elamite signs (after Dahl 2002: Table 3).

highland zone such as metals and semi-precious or precious stones (Damerow and Englund 1989: 63). Where we understand them, the Proto-Elamite texts relate to the administration of rural production, utilising counting and measuring systems that had been worked out for exactly this purpose in the immediately preceding centuries at Uruk and associated sites of the Late Chalcolithic, including Susa. In Alden's argument we would expect exotic resources to feature in the Susa III texts (and indeed in the Uruk III/Jemdet Nasr texts of Lower Mesopotamia), but they stay stubbornly silent in this regard (Dahl 2013: 252). A further point in favour of a unique role for Susa in the development of Proto-Elamite identity is the fact that the earliest type of Proto-Elamite tablets, clumsily written and with basic entries, are found at Susa and, in much smaller quantities, at Sofalin and Sialk (plus a single possibly early text, but out of stratigraphic context, from Tall-e Geser) (Dahl 2013: 251; Dahl *et al.* 2013: 365–366; Alizadeh 2014: 45), which strongly foregrounds Susa as the locus of first experimentation with the Proto-Elamite script.

In a useful table based on the work of Damerow and Englund (1989), Daniel Potts (1999: Table 3.2; see also Dahl 2013: 243, 2018: 384) has summarised the points of similarity and difference between Susa III/Proto-Elamite texts and contemporary Uruk III/Jemdet Nasr texts from Lower Mesopotamia. Similarities include: the general shape and size of the clay tablets; the sealing-writing sequence (see below); the practice of inscribing numerical entries on the obverse and summations on the reverse faces of tablets; elements of the semantic textual structure; and multiple aspects of the numerical systems, as discussed above. Differences include: the techniques of "text wrapping" from obverse to reverse face; the use of a decimal system in Susa III and other aspects of counting; the placement in the text of signs representing objects or commodities being counted (after number signs in Mesopotamia, before number signs in Proto-Elamite); the fact that Susa III ideograms are generally more abstract than those employed in Uruk III proto-cuneiform texts; and the dearth of lexical or "school" texts in the Proto-Elamite corpora. We can add a further significant difference: whereas the interpretation of Uruk III/ Jemdet Nasr texts has been furthered through graphic and structural comparison with later Mesopotamian texts, of the Early Dynastic and later periods, the lack of an established connection between the Proto-Elamite script and the Old Elamite script of the later third and early second millennia BC has negated any value in using the later texts as points of entry for an understanding of the early texts (Dahl 2019: 66). As Damerow and Englund put it: "a determination of any genetic relationship between Old Elamite and the language possibly represented by the proto-elamite texts seems to us at present impossible" (Damerow and Englund 1989: 5).

The workings of Proto-Elamite texts have been much clarified in recent years thanks to the pioneering research of Damerow and Englund (1989), Jacob Dahl (2009, 2013, 2018; Dahl *et al.* 2013) and François Desset (2012, 2016). Most texts begin on the obverse with a single sign that probably serves as a header, giving the name of the "household" involved, followed by a sequence of entries, which are usually summed on the reverse. The semantical structure of Proto-Elamite texts is depicted in Figure 7.8. Dahl (2013: 247, 2019) discerns four categories of signs in Proto-Elamite texts: those adapted from Mesopotamian proto-cuneiform, including number signs (Figure 7.9) (Desset 2016: Figure 6); those depicting natural objects such as plants and animals; those depicting cultural objects such as vessels, standards and yokes; and those that appear to be completely abstract. The fringed or "hairy triangle" sign (M136), which occurs as both a written sign and a glyptic motif, is believed to stand for "household" or "institution" (Damerow and Englund 1989: 16), and always occurs as a frame for other signs that are seen as specifying a particular household or owner relevant to the text in question (Figure 7.10) (Dahl 2013:

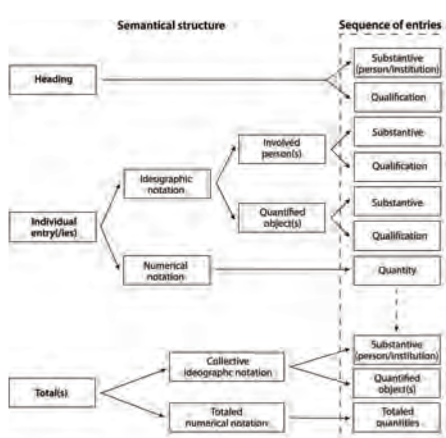

Figure 7.8 Semantical structure of Proto-Elamite texts (after Damerow and Englund 1989: Figure 7).

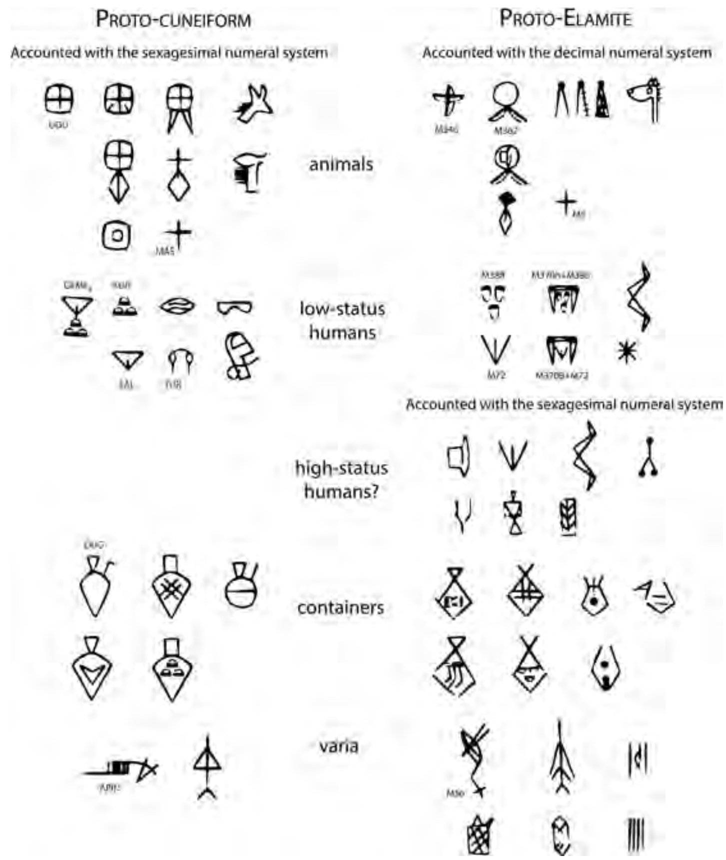

Figure 7.9 Graphical correspondences between proto-cuneiform and Proto-Elamite signs and their counting systems (after Desset 2016: Figure 6).

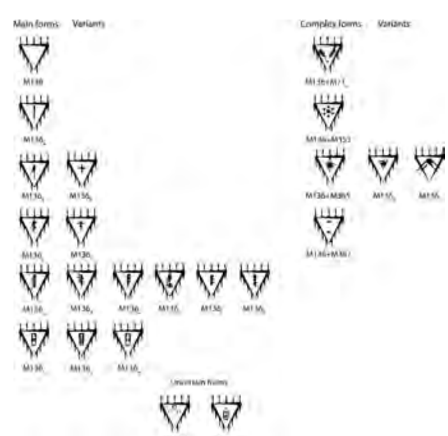

Figure 7.10 Proto-Elamite sign M136 ("hairy triangle") and its variants (after Dahl 2019: Figure 11).

249, 2019: Figure 11; Dahl *et al.* 2013: 367). Lamberg-Karlovsky (1986) has suggested that the hairy triangle in one of its variants signifies the ruler of Susa, and Dahl (2013: 249, 2019: 81) proposes that the sign is a representation of the ruler's standard. We recall here the significance of "spade-headed" standards in the glyptic art of Susa in both the Susa I and Susa II periods (Chapter 6), which could be viewed as direct ancestors of the hairy triangle motif of Susa III. A chunky cross symbol is also often inscribed in a position on the text to suggest a significance comparable to that of the fringed triangle (see below).

The Proto-Elamite texts from Susa, and from all other sites, deal mainly with a range of agricultural produce, with animals themselves, with human labour, probably in the form of slaves, with field accounts and with cereal production (Dahl *et al.* 2013: 365; Dahl 2015, 2018, 2019; Desset 2016; Kelley 2018). Many texts appear to deal with the issue of rations of grain to low-status workers who are organised into work-gangs with overseers and administrators (Dahl 2013: 253–254; Dahl *et al.* 2018). Sheep and goat appear to figure prominently in Proto-Elamite texts (Figure 7.11) (Dahl 2005b, 2009, 2015; but see doubts in Desset 2016: 74–75), in accordance with their strong representation in the zooarchaeological record, where it exists (Zeder 1991). Dried cheese and clarified butter from both goat and sheep are frequently counted in the texts. Cows and pigs do not seem to feature, but one Susa text suggests herding of equids of unknown type (Dahl 2013: 255). A single Susa text probably deals with wild animals, listing 23,600 specimens of what may be gazelle (Dahl 2013: 255–256). Evolution in the shape and content of Proto-Elamite texts can be traced at Susa, with later texts generally having longer strings of signs, suggesting increasingly complex content (Dahl 2012: 3–4). According to Dahl *et al.* (2013: Figure 18.17), the Proto-Elamite tablets from Susa span the duration of the Proto-Elamite horizon, from early (Acropole I 17 AX) to terminal (Acropole I 14B). Only the texts from Tepe Sofalin (see below) match those of Susa in covering this timespan.

Especially notable amongst the finds from Susa in Acropole I levels 16A to 14B, and equivalent levels of the Susa IIIA period, are large quantities of seal impressions, many on the clay tablets discussed above and others on clay sealings (Figure 7.12) (Legrain 1921; Amiet 1972; Pittman 1992b; Piran 2013; Ascalone 2018; Dahl 2019: 90–93; Álvarez-Mon 2020: 62–69) as well as actual seals. In all, some 625 different Proto-Elamite seal images have been identified at Susa (Pittman 1994: 79, 1997: 140; in press), a major indication of the numbers of people or offices involved in some kind of bureaucratic activity at Susa through the short duration of the Susa IIIA period and therefore also of the importance of Susa. Of the 625 images, *c.* 50% are in Pittman's classic figural style, 40% in the glazed steatite style and the remaining 10% in wheel-cut and incised styles (Pittman 1994: 79). There is a striking shift away from the representation of human beings, so lavishly depicted in Late Uruk/Late Susa II glyptic (Chapter 6), toward the representation of animals on cylinder seal scenes, in particular wild goats and sheep, lions and bulls (Dittmann 1986b: 348; Amiet 1992: 4–5; Pittman 1992b: 71–77), as well as occasional fantastical creatures as on "Seal 329" (Dahl 2012: Figure 4). In keeping with their absence from both the Proto-Elamite textual record (Dahl 2015) and archaeological record (Mashkour 2006b), pigs are not represented in Proto-Elamite glyptic (Dahl 2019: 91), surely a significant absence to which we return later.

We note here that a similar shift from human to animal representation characterises the change from Late Chalcolithic to Ninevite 5 glyptic across Upper Mesopotamia at approximately the same time as the Late Susa II-Proto-Elamite transition in Iran (Matthews 1998). Furthermore, Jacob Dahl (2013: 246, 2014, 2019: 79; see also Herrenschmidt 2000: 78) has noted that, in contrast to the proto-cuneiform system, no Proto-Elamite written signs are based on parts of the human body, except for the two Mesopotamian-origin signs SAL and KUR$_a$ (M72 and M388 in the Proto-Elamite sign list), which in the proto-cuneiform tradition represent female and male genitalia and came to stand for "female slave" and "male slave," respectively (Damerow and Englund 1989: 57; Englund 2009). The lack of reference to the human body in Proto-Elamite art, including glyptic, sculpture and written signary, suggests a deliberate prohibition, probably ideologically situated, of portrayal of the human

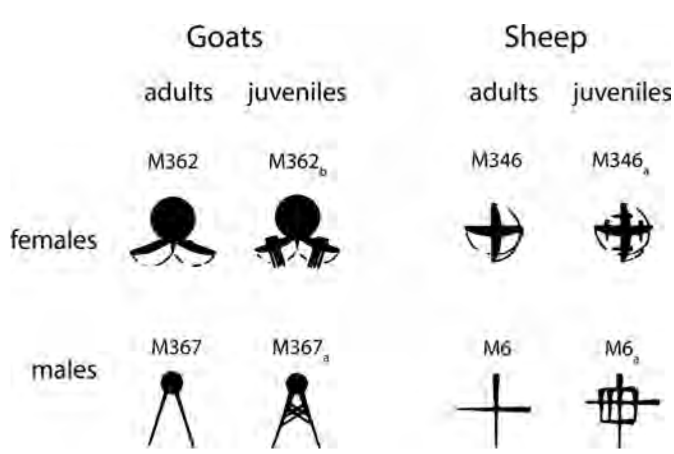

Figure 7.11 Proto-Elamite signs representing sheep and goat (after Dahl 2019: Figure 10).

Figure 7.12 Proto-Elamite seals and seal impressions (SB4832; photo credit: © RMN-Grand Palais, Musée du Louvre/Franck Raux; SB2801; photo credit: © RMN-Grand Palais, Musée du Louvre/Franck Raux; SB1484; photo credit: © RMN-Grand Palais, Musée du Louvre/Thierry Ollivier; SB6166; photo credit: © RMN-Grand Palais, Musée du Louvre/Thierry Ollivier; SB2675; photo credit: © RMN-Grand Palais, Musée du Louvre/Thierry Ollivier).

form. With the resurgence of Mesopotamian, i.e. Sumerian, influence on Susa in the mid-third millennium BC, human beings once more reappear as major components of glyptic scenes (Amiet 1992: 6).

Proto-Elamite cylinder seals and seal impressions from Susa show great vitality in subject matter and in execution. Seal cutters made good use of the bow drill and graver to create lively scenes, including animals in files, in opposed pairs and in formally arranged heraldic scenes (Pittman 1992b). Lions and bulls are frequently portrayed together, usually in conflict with each other. Design elements interpreted as representing landscapes, such as mountains, trees and flowers, may equally serve as referents to signs employed on Proto-Elamite texts (Pittman 1992b: 70). A further device is that of metonymy where a part of an animal is depicted as a referent for the whole creature, a device commonly in use in signs of the Proto-Elamite script as well as of its cousin in Mesopotamia, proto-cuneiform. Uses of the chunky cross symbol and the distinctive fringed triangle motif in Proto-Elamite glyptic are matched by signs employed on Proto-Elamite texts. An especially striking example is illustrated in Pittman (1992b: 75; Potts 1999: pl. 3.5) (Figure 7.12: top right) where both the inscribed text, neatly confined to the tablet edges, and the cylinder seal impression, the so-called "ruler of Susa's seal" (Dahl 2012: 9), carefully rolled across the middle of the tablet, contain vivid depictions of the fringed triangle. The chunky cross symbol features as a motif on cylinder seals (Dittmann 1986b: Figure 12.5; Pittman 1994: Figure 21), as an integral component of a wall painting on plaster in area ABC at Tal-i Malyan (Sumner 1976: pl. IId; see below), and as an inscribed Proto-Elamite sign (M327) on multiple tablets (Dahl 2012: 10). In this last capacity, the chunky cross sign always appears in a header position on tablets so as to betoken an owner of some kind, whether household, office, or individual (Dahl 2012: 10). Other texts, which appear to be later in the Proto-Elamite horizon, have deliberate markings incised into the clay in the places where we would expect to see a seal impression. Such marks include interlocking angular and rectilinear shapes, occurring on about 60 texts from Susa, almost all of them from the very last phase of Proto-Elamite writing (Dahl 2012: Figure 2).

On Proto-Elamite glyptic, animals are often portrayed adopting human postures and carrying out human activities, in scenes that appear at times "frankly humorous" and at other times "deeply imbued with spiritual force" (Root 2002a: 181). It is likely that many of these scenes refer to specific myths, legends and religious narratives that are otherwise lost to us. As discussed in preceding chapters, animals feature prominently in Iranian art throughout prehistory and history, an attribute singled out by Margaret Cool Root (2002a: 169) as "one overarching theme that imposes a remarkable hallmark unity upon ancient Iranian creativity in the visual arts. It is a veritable reveling in the decorative potentials of animal forms and the richly textured valences of their symbolism." Holly Pittman (2013b: 299) has pointed out that the practice of portraying animals in human poses dates back to the Middle Uruk/Middle Susa II phase at Susa, and may be seen as a distinctly Iranian or Elamite characteristic, as attested, for example, on a Neo-Elamite seal from Susa dating some 2,000 years after the collapse of the Proto-Elamite world (Chapter 11). Rare small-scale sculptures of stone and metal augment these themes (Álvarez-Mon 2020: 69–71).

Unique to Proto-Elamite glyptic is the widespread use of a soft, light greenish stone called heulandite, generally for seals displaying figural scenes (Amiet 1983: 204; Pittman 1992b: 70). X-ray diffraction analysis of Proto-Elamite cylinder seals from Susa and Shahr-i Sokhta (Lahanier 1976) and of an unprovenanced seal in the British Museum (Sax and Middleton 1989) identified the seal stone as a volcanic tuff that could have been sourced from a range of locations across upland Iran, including in the vicinities of Sialk and Tepe Yahya. The find of two heulandite "beads" at Tepe Yahya is discussed below in this connection. Bitumen compound and white limestone are also used for Proto-Elamite cylinder seals.

In keeping with Uruk/Late Susa II practice, in Mesopotamia and Iran, where we can see the relationship, the cylinder seal was rolled across the soft clay surface of Proto-Elamite tablets prior to inscription of the written text – we can see where the stylus cuts across the low relief of the seal impression wherever the two intersect. This sequence suggests that the seal was employed as a letterhead or general designation of authority rather than as a signature and confirmation of the specific content of each text (Matthews 1993: 24–25). There are no obvious correlations between the content of sealed tablets and the iconography of their seal impressions, beyond the occurrence of goat depictions on seal impressions on some texts dealing with animal management (Dahl 2012: 6). It is also notable, and in step with evolving sealing-writing practices in Uruk III/Jemdet Nasr Mesopotamia, that the frequency of using seals on written texts declines in the Susa III period as compared to the preceding Late Susa II period (*pace* Dahl 2013: 246). Thus, of 44 published Late Susa II numerical tablets from Susa (Vallat 1971: 235, 1973: 103; Le Brun 1971: 179; Le Brun and Vallat 1978: 11), at least 27, or 61%, bear seal impressions. Of 1,543 published Proto-Elamite tablets from Susa (Scheil 1900, 1905, 1923, 1935; de Mecquenem 1949; Vallat 1971: 235; Dahl 2019), only 275, or 18%, have seal impressions (Pittman 1994: 226), a major fall in sealing frequency compared to the Late Susa II texts (Matthews 1993: 27). The frequency of sealing on the < 100 non-Susa Proto-Elamite tablets supports the Susa picture, with a frequency of *c.* 13% sealed tablets across the assemblages from Malyan, Sialk, Yahya and other sites (detailed in Matthews 1993: 27; Desset 2016: 87). A similar decline in sealing frequency of proto-cuneiform texts is attested in Uruk III text assemblages from Uruk and Jemdet Nasr in Lower Mesopotamia, as compared to the preceding Uruk IV assemblage from Uruk (Englund and Grégoire 1991; Matthews 1993: 26), and the practice of sealing texts disappears altogether by the Early Dynastic I period, to reappear at the end of the third millennium BC in the Ur III period (Steinkeller 1977). By that time, the use of seals on tablets had evolved to serve as a confirmatory signature, with the act of sealing taking place after the text had been inscribed on the tablet, sharply differing from earlier practice.

Associated with the decline in Susa III of the association of seals with written texts is a rise in the use of cylinder seals for other purposes, in particular in order to mark clay lumps, or sealings, which were used to secure containers and store-room doors. Assemblages of clay sealings with cylinder seal impressions have been recovered from Susa III contexts at a range of Proto-Elamite sites, including Malyan, Yahya, Sialk and Shahr-i Sokhta (see below). This divergence in the trajectories of writing and sealing from *c.* 3100 BC doubtless indicates the increasing ability of writing to meet the needs of a complex bureaucracy, thus rendering redundant the information provided by the iconography of cylinder seals. At the same time administrators switched the use of their seals away from writing and towards the direct control over storage of and access to goods and commodities.

Alongside the figurative iconography of Proto-Elamite glyptic, a non-figurative cylinder seal style was in full flow, attested over an enormous area of Early Bronze Age Southwest Asia, from Sistan in eastern Iran to the Habur valley of northern Syria, and from Nineveh in Upper Mesopotamia to Ur, Fara and Telloh in Lower Mesopotamia, with dense concentrations along the foothills of the mountain zones in the Diyala and Hamrin regions of eastern Iraq and in Khuzestan. The style is the so-called glazed steatite or Piedmont style (Collon 1987: 20–23; Pittman 1994), which at Susa is first found in level 17 of Acropole I (Pittman 2013b: 328). The seals themselves are made of steatite, probably from a Kerman source, whitened and hardened by fire at up to 1,100°C to form enstatite (Collon 1987: 20), hence the term glazed steatite. At Iranian Proto-Elamite sites, seals of Piedmont style occur alongside the figured Proto-Elamite style of cylinder seals. They are very rarely used on clay tablets (only on three of 275 sealed Susa Proto-Elamite tablets – Pittman 1994: 226), more commonly occurring as seal impressions on clay sealings or as seals themselves (Amiet 1993: 26). Notably, the distinctive chunky cross motif features on a rare Piedmont style seal impression on a clay sealing from Jemdet Nasr (Figure 7.13: bottom right) (Matthews 2002c: Figure 7.8), along with a mountain goat, suggesting some degree of connectivity between Proto-Elamite Iran and Jemdet Nasr Mesopotamia despite their otherwise divergent artefactual trajectories.

Designs on the Piedmont style seals include simple hatched motifs such as arches, crosses and circles, as well as stylised natural elements such as trees, leaves and rosettes, with occasional highly stylised animals, wild goat above all (Figure 7.13) (Collon 1987: 21–22; Pittman 1994: Figures 3–4). As with the figured Proto-Elamite style, humans are never depicted in Piedmont style glyptic. On the basis of associated ceramics and the wide range of glazed steatite styles present, Pittman (1994: 212, 249) argues that the glazed steatite style appeared first at Susa as an integral component of the nascent Proto-Elamite administrative system, before spreading to other sites on the plateau, further indication of the great importance of Susa at this time.

How then might we interpret the glazed steatite seal phenomenon, one of the most widespread artefact distributions from the entire ancient world? Their geographic distribution (Figure 7.1) far exceeds the extent of the Proto-Elamite horizon, or of any other coherent socio-political construct of the time: "their distribution implies the existence of a vast international Irano-Mesopotamian community which remains difficult to understand," as Pierre Amiet has stated (1993: 26). Amiet's (1980: 201) own interpretation is that these seals were used by merchants or by low-status administrators, while high-status individuals enjoyed the use of more elaborate and distinctive figured style seals, but Pittman's (1994) detailed study shows that there is considerable structured variability in the glazed steatite style iconography. She argues that this variability was meaningful, not purely decorative, within systems of local administration that had first developed at Susa. Support for this argument comes from the fact that many glazed steatite seals have signs that are clearly the same as written Proto-Elamite signs on clay tablets, including the hairy triangle and the chunky cross. Pittman (1994: 261–262) makes a convincing case that the spread

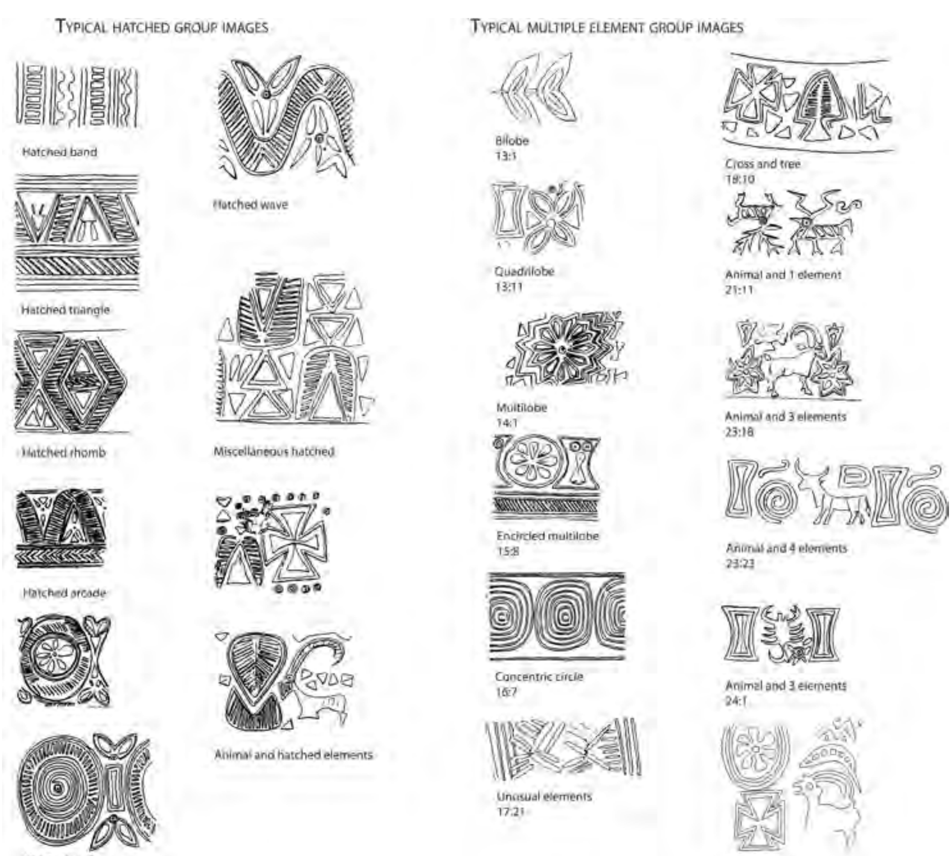

Figure 7.13 Piedmont style seals and seal impressions, including one from Jemdet Nasr (after Pittman 1994: Figures 3–4; Matthews 2002c: Figure 7.8).

of the glazed steatite style westwards into the Diyala valley and the Hamrin basin of central-eastern Mesopotamia relates to a desire of Proto-Elamite administrators to extend their control within the context of a

> relationship that was not complex enough to require writing or that writing could not be used because two or more languages were involved. Could the glazed steatite design elements have been used to identify certain groups that were in some way interacting with each other?

Finally, it is striking that at the time when Proto-Elamite writing disappears, the glazed steatite glyptic style also disappears, across the entire geographic spread of its occurrence, strong evidence in support of Pittman's argument for an integral connection between these two mechanisms of administrative control and official identity.

The significance of Susa in the Susa IIIA period

In summarising the Proto-Elamite evidence from Susa in the Susa IIIA period, we can detect important threads of continuity through the collapse and hiatus that mark the transition from the Late Chalcolithic to the Early Bronze Age. Perhaps most significant is the evidence for a local development at Susa of administrative practices, including specific features of writing and sealing, which appear to continue to relate exclusively to the administration of land and rural production. The multiple points of continuity attested in the counting systems, coupled with those in specific practices such as the sealing-writing sequence, and indeed the very acts of writing and sealing as administrative activities, strongly suggest that Uruk IV/Late Susa II-style or Uruk IV/Late Susa II-trained bureaucrats must be viewed as the major direct source of influence over the purpose, structures and workings of the Proto-Elamite writing system, an interpretation that does not rule out also a significant degree of shared ancestry through the numero-ideographic line (Desset 2016).

And yet the Proto-Elamite script itself, and so many of the material culture components, as we have seen, are totally different from what went before at Susa, in the Susa II period. How do we explain this special mix of disjunction and continuity? We can start by proposing that the hiatus detected in the Susa Acropole I sounding between levels 17A and 16 must have been very short, less than a human generation. The number systems of the Uruk IV/Late Susa II, Uruk III and the Susa III texts are complex and idiosyncratic enough that it is inconceivable that they arose through parallel, or sequential, independent invention. The knowledge of these number systems must have been sustained and passed on by Late Susa II scribes to Susa III scribes, whose initial experiments with written Proto-Elamite are found in quantity only at Susa (plus perhaps Sialk and a single text at Tall-e Geser) (Dahl 2013: 251). In concert with this continuity, the ongoing use of bevelled-rim bowls, low-sided trays and other selected ceramic forms into the Susa III period further argues for a short hiatus between Late Susa II and Susa III, as asserted by Dittmann (1986a: 171). Before or during this hiatus a taste was sustained for high-status food products such as the leavened bread produced in bevelled-rim bowls that were already widespread across Iran in the preceding Susa II period (Potts 2009).

But everything else was new: the architecture, the pottery, the seal iconography, and the script (therefore the language?) employed on the texts. These differences suggest the intrusion into Susa of a new elite group at *c.* 3200–3150 BC, certainly with strong connections to regions to the east, Fars in particular, who quickly realised the benefits to be had from a tight administration of the region's rural production, and who therefore retained the services of the existing bureaucrats long enough to learn the system from them, while insisting on use of their own language as underpinning a new written script. It is striking that, as Jacob Dahl has noted (2013: 243), information in Proto-Elamite texts is written "continuously in lines...much better resembling spoken language" than is the case with the visual hierarchies of Uruk IV-III proto-cuneiform texts of Lower Mesopotamia (see also Englund 2004: 140–141). This innovative attribute of Proto-Elamite texts, which amounts to "a reformulation of the principle of writing when in Iran" (Dahl 2013: 243), suggests that a single imposed language may lie behind the non-numerical signs of the Susa III texts and that that language, whatever it may have been, was the elite *lingua franca* of the Proto-Elamite world from Susa to Shahr-i Sokhta and from Sofalin to Yahya, a suggestion that is not invalidated by the possible inclusion of personal names of non-slave humans, which may have had Akkadian or Sumerian origins (Desset 2016: 87).

Susa's true situation in the Proto-Elamite horizon, then, may lie somewhere between the positions articulated by Alden (1982b) and Potts (1999, 2016): Susa was still a major administrative hub, exercising control over large-scale rural production, including sizable labour gangs, and engaging in networks of interaction across the highland plateau. As Alden (1987: 162) proposes, Susa may have functioned

> as a port of trade, a more or less neutral location where exchange between traders from the two neighboring polities [i.e. Proto-Elamite Iran and Jemdet Nasr/Early Dynastic I Mesopotamia] could take place....a pattern where most of the town's residents were engaged in some form of interregional exchange.

We may still wonder about the possible source of the huge numbers of animals and probable slaves (Englund 2009) accounted for in the Susa Proto-Elamite texts – were the animals passing through Susa from the highland zone into Mesopotamia, as we know they did in huge numbers in the late third millennium during the time of the Ur III empire (Chapter 10)? And were the slaves captives from the hills being traded further west?

In any case, a new elite group was in control at Susa and their origins were from outside Susa: they had conquered Susa but, like many conquerors before them and since, they found much to admire in their conquered territory and they quickly set about adapting and adopting what they liked in the old regime in order to serve the new. And the orientation of the new elite cadre at Susa was very much toward the highland zone where they had almost certainly originated. The contemporary depopulation or realignment of settlement on the Susiana plain in the Susa III period (Alden 1987; Zalaghi 2019) might then be seen as a response of previously settled rural communities to an atmosphere of instability and perhaps violence attendant upon the highland take-over of their lowland homelands.

The only other excavated Proto-Elamite site on the Susiana plain is the complex of mounds at **Tappeh Senjar**, located 18 km north-north-east of Susa at a key point for communications northwards into the Zagros uplands and westwards to the Mesopotamian plains (Sardari and Attarpour 2019). These mounds extend over some 20 ha in total. Excavated levels of Proto-Elamite date at Senjar include mudbrick structures and typical ceramics. The fact that *c.* 7 m of archaeological deposits at the base of Senjar's main mound lie submerged below alluvial sediments of the Karkheh river gives a vivid indication of the challenges involved in locating smaller archaeological sites in this environment and of the dangers in over-interpreting what must always be extremely partial diachronic settlement evidence. The apparent dearth of small-scale Proto-Elamite settlements on the Susiana plain, for example, may be a result of their submergence below modern alluvial sediments, a fate likely to befall all sites in this region with heights less than 7 m. It is notable that the Proto-Elamite phase at Senjar is followed by a gap of up to 400 years in occupation, chiming with significant trans-Iranian evidence for regional settlement collapse through much of the third millennium BC, as discussed below.

The Ram Hormuz plain: Tall-e Geser

On the Ram Hormuz plain 145 km to the southeast of Susa and on a major routeway connecting Susiana with Fars, Proto-Elamite materials were excavated in the late 1940s at the multi-mound site called Tal-i Ghazir, renamed **Tall-e Geser** in recent studies by Alizadeh (Caldwell 1968; Whitcomb 1971; Alizadeh *et al.* 2013a, 2013b; Mutin 2013a: 22–23; Alizadeh 2014). Proto-Elamite levels at Geser directly overlie occupation of Late Uruk/Late Susa II and earlier date (Whitcomb 1971: 16; Wright and Carter 2003: 67; Alizadeh 2014). The fullest architectural evidence of the Proto-Elamite horizon was uncovered in the Stake Trench at the north end of the mound (Figure 7.14) (Whitcomb 1971: Figures 3, 5; Alizadeh 2014: Figures 15–16), where at least four rooms of an imposing building were revealed in Stake Trench 10, with walls of 1–1.5 m width (Whitcomb 1971: Figure 5). One room contained multiple polychrome jars and large carinated bowls (Figures 7.15–7.16). Stone vessels and animal figurines were also found in these rooms and elsewhere at the site. INAA analysis of ceramics from Malyan suggests an origin for them in the region of Tall-e Geser (Alden *et al.* 2014). It is likely that the contents

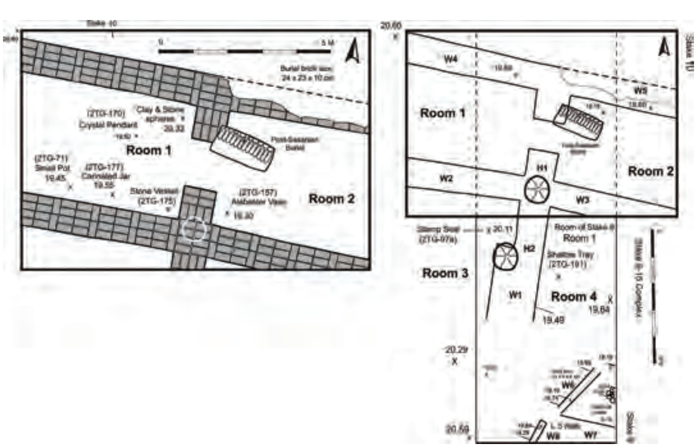

Figure 7.14 Tall-e Geser, Proto-Elamite monumental building in Stake Trench (Alizadeh 2014: Figure 15) (image courtesy of the Oriental Institute of the University of Chicago).

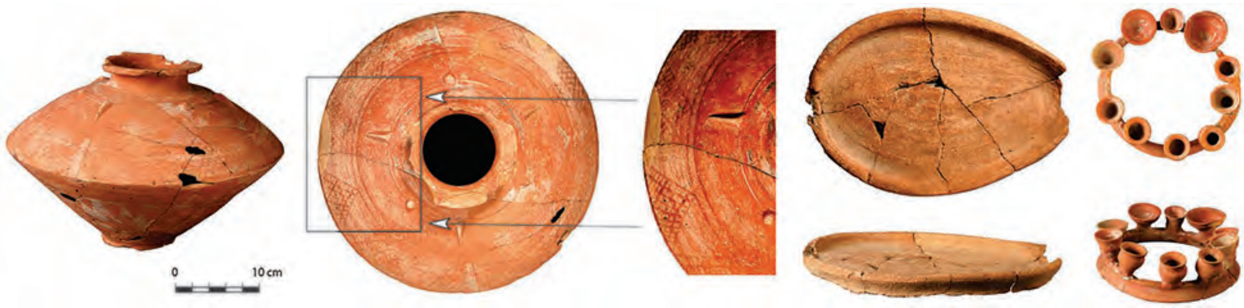

Figure 7.15 Tall-e Geser, Proto-Elamite ceramics (Alizadeh 2014: pl. 4) (image courtesy of the Oriental Institute of the University of Chicago).

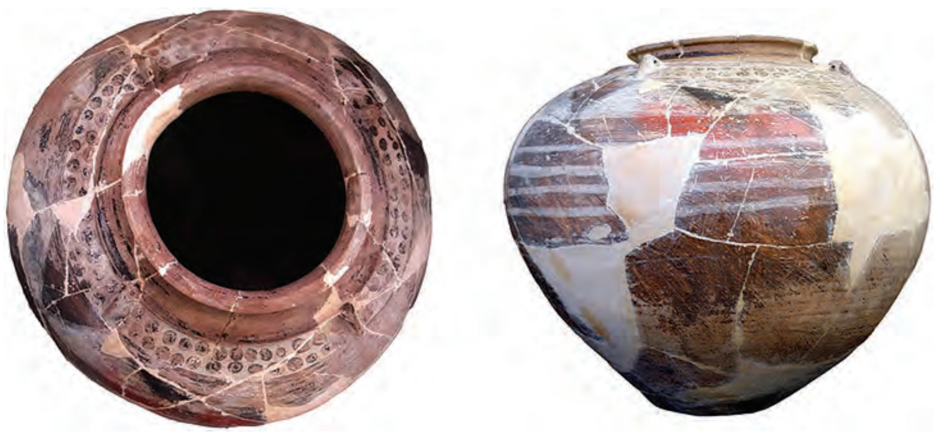

Figure 7.16 Tall-e Geser, Proto-Elamite ceramics (Alizadeh 2014: pl. 4) (image courtesy of the Oriental Institute of the University of Chicago).

Figure 7.17 Tall-e Geser, Proto-Elamite alabaster figurine (Alizadeh 2014: pl. 7D) (image courtesy of the Oriental Institute of the University of Chicago).

of the vessels, such as dates or oils, were more important than the vessels themselves in terms of traded items. These ceramic connections are further supported by Alizadeh's (2014) study of the Geser Proto-Elamite ceramics, which demonstrates strong similarities with Late Banesh Fars, Yahya IVC, Arisman and Sofalin, all situated well to the east and north of Geser itself.

A single clay tablet fragment from Geser, with numerical signs only (Whitcomb 1971: 31, pl. XIA; Alizadeh 2014: 56, Figure 87: E, pl. 6F), is of early type within the developmental sequence of Proto-Elamite writing (Dahl 2013: 251). An alabaster figurine of a monkey or baboon in human pose (Alizadeh 2014: pl. 7D) is typical of Proto-Elamite figurative art (Figure 7.17).

In contrast to the Susiana plain, the Ram Hormuz plain appears to be more densely occupied following the transition from Late Susa II to Proto-Elamite phases (Alizadeh *et al.* 2013a: 124; Alizadeh 2014; Zalaghi 2019). But after the abandonment of Tall-e Geser at the end of the Proto-Elamite period the site is not occupied for some 1,000 years from *c.* 2900 BC, and the entire Ram Hormuz plain appears to be devoid of human occupation through this long timespan (Alizadeh *et al.* 2013a: 124; Alizadeh 2014).

Tal-i Malyan/Anshan and the Fars region

We saw in Chapter 6 that Late Chalcolithic settlement patterns in Fars were characterised by small villages with little evidence for settlement hierarchy, and a general decline in settled population towards the end of the fourth millennium BC (Sumner 1988, 2003: 109; Hopper and Wilkinson 2013: Figure 3.5). The rise of **Tal-i Malyan** to regional dominance is contemporary with this decline in rural settlement (Figure 7.18). Situated some 500 km southeast of Susa, Tal-i Malyan is of immense importance in the Proto-Elamite horizon, which in Fars is designated the Banesh period (Sumner 1986), as well as in later periods of Elamite history (Hansman 1972). The identification of Malyan with the historically attested Elamite capital Anshan is based on cuneiform brick inscriptions of second millennium BC date (Hansman 1972; Reiner 1973b; T. Potts 1994: 15). Surveys in the Kur river basin emphasise the unique position of Malyan and the limited distribution and hierarchy of Middle Banesh settlements outside Malyan (Sumner 1974; Alden 2013: 221). There appears to have been specialised production

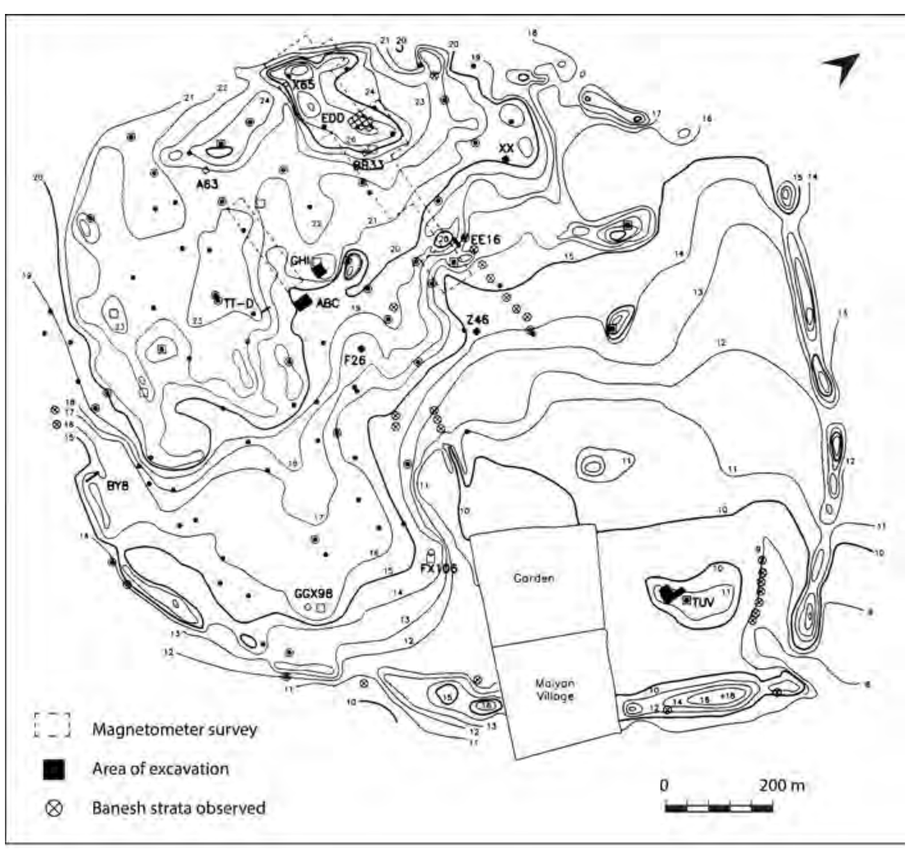

Figure 7.18 Tal-i Malyan, plan of site to show excavated areas and surrounding city wall (after Sumner 2003: Figure 4).

of chaff-tempered goblets and trays in huge quantities, as well as stone and plaster vessels, in the Early Banesh phase at the site of Tal-e Qarib, some 10 km east of Malyan (Alden 2013: 222). Archaeometric analysis of clays used to make ceramic ring scrapers, a specialist potter's tool, from sites in the Kur river basin and in Khuzestan indicates that the scraper tools were always made from clays differing from those used to make pottery vessels at each site, the interpretation being that Proto-Elamite potters were itinerant craft specialists constituting "an important factor in the distribution of broadly similar Proto-Elamite style ceramics throughout a large part of southwestern Iran" (Alden and Minc 2016: 874).

Malyan is located at *c.* 1,600 m above sea level in a broad valley drained by the Kur river. Excavations at Malyan took place between 1971 and 1978 under the direction of William Sumner. The site has a history reaching back into the Early Chalcolithic but substantive levels have been investigated mainly for the Middle Banesh period. During this time the site appears to have covered at least 50 ha in area (Sumner 1986a: 202; Thornton 2012: 598), significantly larger than Susa in the Susa III period and probably drawing its population from abandoned villages of the region. Building on ideas articulated by Sumner (1986a), John Alden (2013: 226) suggests that not all of Malyan was permanently occupied, but rather that "a significant proportion of Middle Banesh Tal-e Malyan was only occupied seasonally, with lineage members involved in trading, specialised craft production, or political activity arriving in spring and departing in the autumn along with the herds and herders." He proposes that Malyan's population might have comprised 50% permanent residents and 50% seasonally transhumant pastoral nomads, each component engaging in beneficial interaction with the other, on analogy with historically attested sedentary-nomad dynamics in the southern Zagros.

In contrast to this scenario, as discussed in Chapter 6, Potts (2010, 2014) denies the validity of ethnographic parallels of pastoral nomads from recent history, arguing that they represent a relatively modern phenomenon. Instead, Potts proposes that prehistoric Iranian villagers moved with their herds in seasonal patterns that did not involve large-scale, long-distance transhumance. A major attribute of Alden's argument is that it provides a mechanism for the long-distance interactions and material culture similarities across large geographic spans that so characterise the Proto-Elamite horizon. If significant elements of society were seasonally moving between major centres of the Proto-Elamite world, from Fars to Susiana, from Kerman to Fars, then communication of technologies, styles and practices would be greatly facilitated. In Alden's argument, then, the Proto-Elamite horizon does not represent a true state, but rather a coalition of strong tribal leaders (possibly represented in Proto-Elamite texts as "owners" or "households": Alden 2013: 230), making use of central places such as Malyan for economic, cultural and social purposes. This argument receives support from the clear evidence that Malyan functioned as "an administrative focal point for the integration of disparate economic specializations in the region" (Zeder and Blackman 2003: 137), in particular through serving as a meeting place for settled and pastoral nomadic communities.

Malyan in the Middle Banesh phase comprises a large mounded upper town and an extensive lower town, the whole site surrounded by a city wall in the Late Banesh phase (Figure 7.18) (Sumner 1985; Álvarez-Mon 2020: 71–74). Radiocarbon dates indicate a dating within the last three centuries of the fourth millennium BC for Middle Banesh occupation in both areas, ABC and TUV (Wright and Rupley 2001: 96–97; Sumner 2003: Table 13;; Desset 2016: Figure 26). Excavations in area ABC on the upper mound exposed a series of major building levels the lowermost of which, level 4, has a possible curving fortification wall (Figure 7.19) (Alden 2003b: 112). The most impressive architecture of ABC is in level 3 (Figures 7.19–7.20) (Alden 2003b: Figure 9.3; Sumner 2003: 27–34), a massive structure covering at least 25 x 15 m. Timbers of poplar, maple, elm, oak, pistachio and almond are attested by charcoal fragments in the ruins of the building (Miller 1982). Polychrome frescos were painted on many of its walls, in black, white, red and yellow colours (Figure 7.21) (Nickerson 1977; Álvarez-Mon 2020: pl. 31). Motifs include striped borders, stepped patterns, swirls and rosettes (Sumner 2003: 28, Figures 15–19). Artefacts within the building include painted plaster bowls, many ceramic vessels and beads, over 100 clay sealings and seven Proto-Elamite tablet fragments (Figure 7.22). Distinctive relief decorated vessels with animal and floral motifs may have had a cultic significance (Sumner 2003: 50). The succeeding building level 2 (Figure 7.19) also comprised a massive structure with *in situ* storage vessels, clay sealings and Proto-Elamite tablets, as well as much evidence for working of materials such as specular hematite, shell and mother-of-pearl (Sumner 2003: 34–39; Zeder 1991: 121–122; Vidale 2003; Zeder and Blackman 2003: 123). The ABC buildings can be interpreted as high-status structures whose occupants were concerned with storage and control over movement of commodities, as well as with accounting and recording of those activities. The production of luxury craft goods is also well attested in area ABC.

In area TUV, effectively a separate 3 ha mound in the lower town, several phases of a substantial architectural complex with craft production and living quarters with hearths and storage bins were excavated (Figures 7.23–7.24) (Sumner 1986, 1988; Nicholas 1990; Zeder 1991: 123–129; Zeder and Blackman 2003: 123–126). In

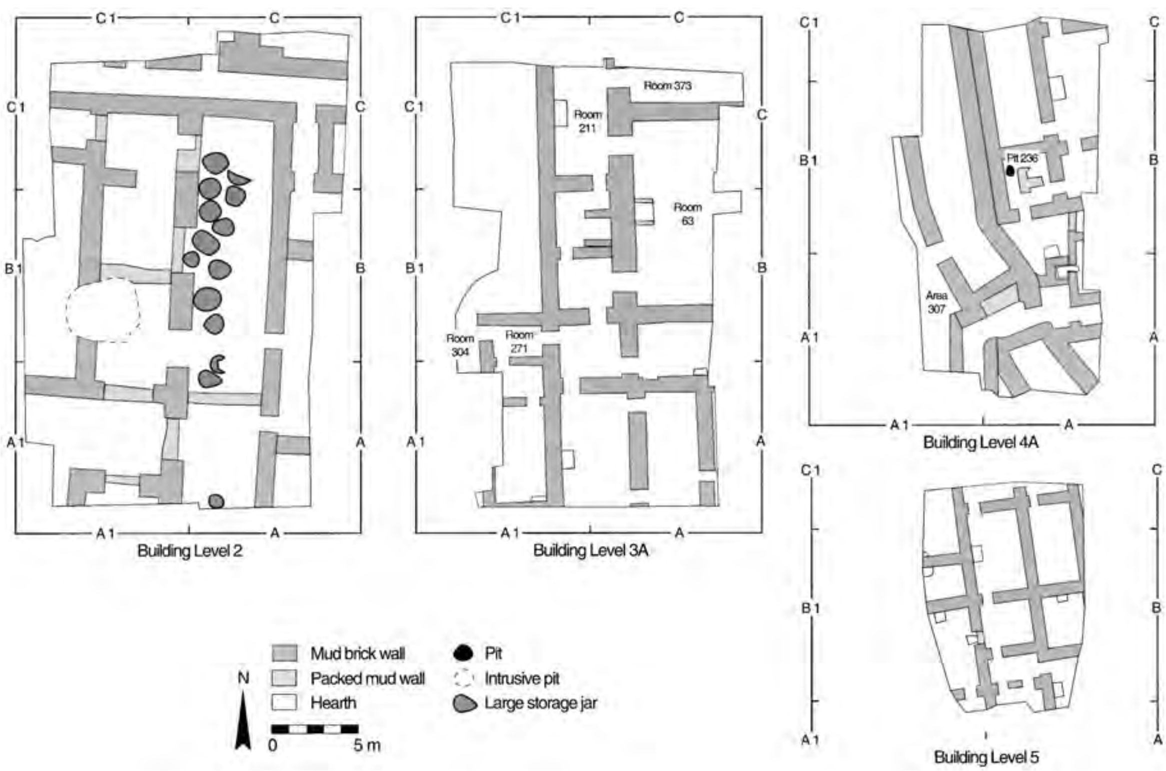

Figure 7.19 Tal-i Malyan, ABC building levels 2–5 (after Alden 2003b: Figure 9.3).

Figure 7.20 Tal-i Malyan, ABC building level 3 from the south (after Sumner 2003: pl. 8).

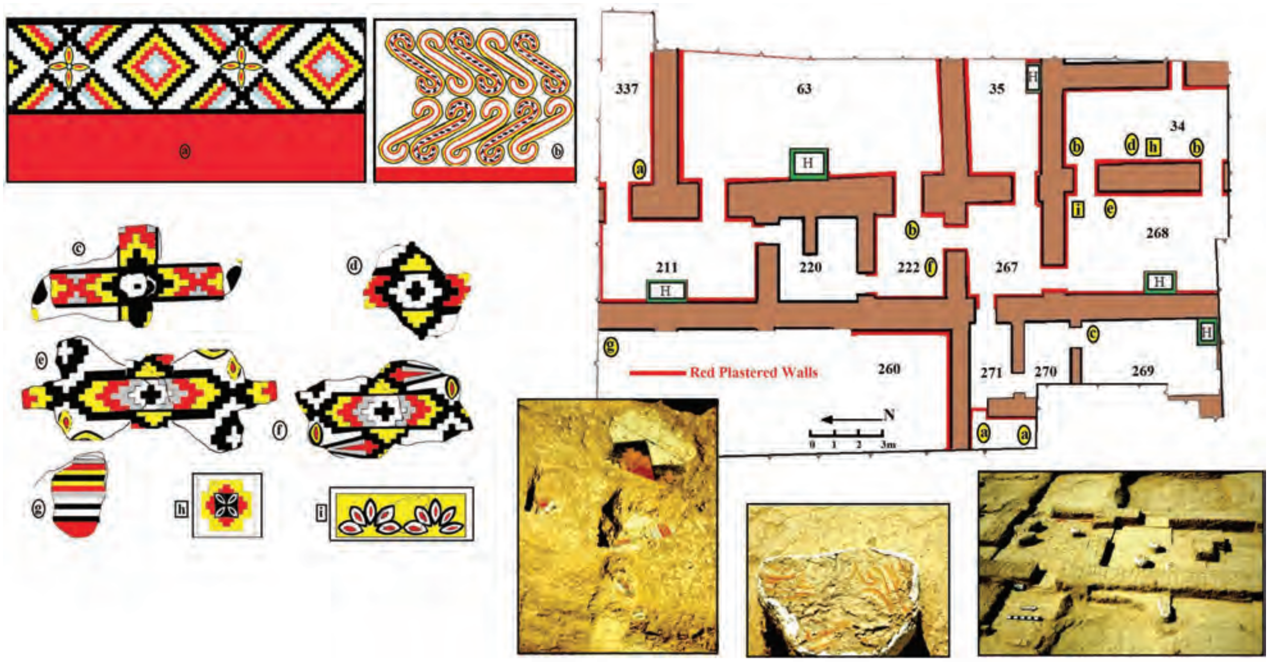

Figure 7.21 Tal-i Malyan, ABC building level 3, selection of motifs painted on wall plaster (Álvarez-Mon 2020: pl. 31) (image courtesy of Javier Álvarez-Mon).

the western section of the TUV level III architectural unit there is evidence for large-scale usage and disposal of mass-produced pottery vessels, including bevelled-rim bowls and low-sided trays, as well as storage (storage vessels and clay sealings), record keeping (clay sealings, bullae, tablets) and food preparation, while the eastern section appears to be more concerned with living and reception. The area to the north of the TUV III building has evidence for copper-based metallurgical activity, exclusively of arsenical copper (Pigott 1999: 87; Pigott *et al.* 2003). There is considerable evidence for a range of craft activities in TUV, including cloth working, metallurgy, bead and shell working, and chipped stone knapping. There was also extensive production of lime for use as wall plaster on several of the buildings (Blackman 1982; Wasilewska 1991; Zeder 1991: 65–66). A single room in area TUV also has painted plaster. A few human burials in area TUV are mainly of infants (Nicholas 1990: 50–51). Overlying TUV III, the architecture of TUV level II consists of a very regular layout of rectilinear buildings, also with clear distinctions in activity zones.

Clay sealings with cylinder seal impressions were found in both areas ABC and TUV, often in distinct clusters suggesting episodic disposal of discarded sealings (Figures 7.22, 7.25) (Sumner 1976: 108–109; Nicholas 1990: 84; Pittman 1994, 2003c). Iconographically, the Malyan seal scenes match well with those from Susa Acropole I 16-14B (Pittman 2003c: 108). Only three cylinder seals were found, two from building level 4A in area ABC (Pittman 2003c; Sumner 2003: Figures 44a-b), both depicting rows of quadrupeds in Proto-Elamite style, and one from more recent excavations with eye and flower motifs (Abdi 2001b: Figure 30). Other glyptic scenes on clay sealings and on 6 of the 33 tablets (Stolper 1985: 5) have classic Proto-Elamite components such as animals in quasi-human stances (including a caprid acting as a scribe – Pittman 2003c: 108, Figure 44f), crosses and rosettes, plus a striking stepped platform scene found on 43 jar sealings from ABC level 3A and reminiscent of painted motifs on the building wall faces of the same level (Sumner 2003: Figure 44h). It seems likely that the stepped platform motif represents the institution involved in running the ABC building and in coordinating the economic and bureaucratic activities clearly taking place in and around that building. It is notable that almost all the seal scenes attested in area ABC are of the so-called classic Proto-Elamite style, while those of area TUV include all four types of Proto-Elamite scene styles, including the glazed steatite style (Pittman 1994: 95, 2003c: 108; Sumner 2003: 82), an indication of highly specialised administrative activity within area ABC and its impressive

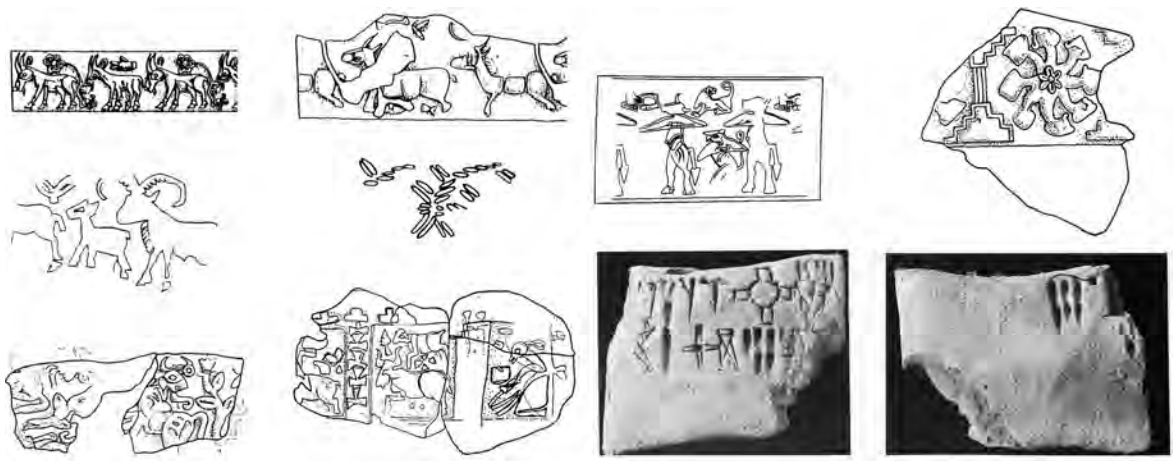

Figure 7.22 Tal-i Malyan, ABC building level 3, selected seals, seal impressions and Proto-Elamite tablet (after Sumner 2003: Figure 44, pl. 21e).

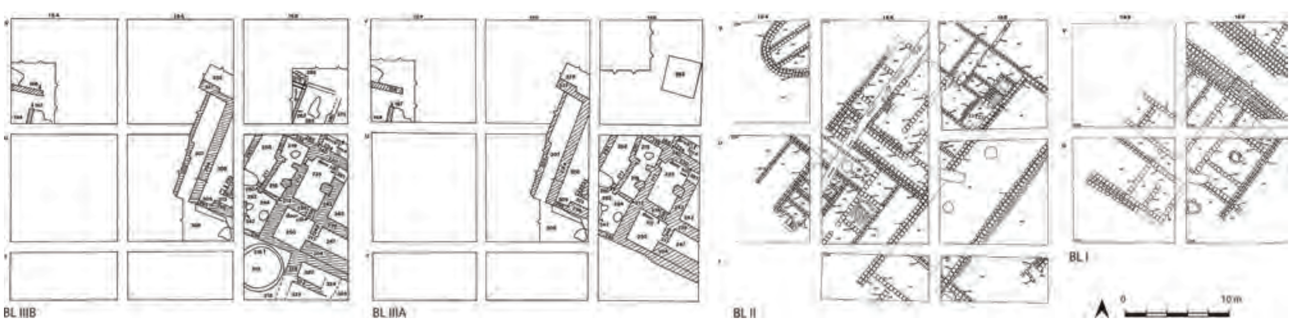

Figure 7.23 Tal-i Malyan, TUV building levels I-IIIB (after Nicholas 1990: Figures 13–16).

architectural setting. Eight sealed hollow clay balls and geometric tokens were also found in area TUV (Nicholas 1990: 84–85).

Analysis of the clays used in sealings from ABC and TUV shows that separate sources of local clay were used in each area (Zeder and Blackman 2003: 136), which Alden (2013: 229) interprets as congruent with "a socio-political system based on lineage affiliations, with no evidence of centralised administration and no hierarchical control of information processing and decision-making." The TUV sealings, which number *c.* 200, include impressions from both cylinder and stamp seals, and were largely used to seal storage jars (Nicholas 1990: 75). The fact that local clays were used to seal jars in both areas is understood to mean that the jars and their contents arrived at the storage facilities of ABC and TUV unsealed, were sealed there, stored and then opened, with breakage and disposal of the sealing all done very locally. This reconstruction of the sequence of receipt, storage and issuing actions is significant because, in Zeder and Blackman's (2003: 136) words, "rather than controlling the movement of goods, sealing and unsealing activities at Banesh Malyan seem to have concentrated on local storage, security, and disbursement with a high value placed on controlling and accounting for extremely localized allotments of goods." These perceptive phrases equally apply to everything we understand about Proto-Elamite administrative activity, be it tokens, hollow clay balls, seals, sealings or tablets – their sole concern is to maintain close control of local productivity, to ensure that local rural production is closely monitored and, no doubt, taxed.

A total of 33 Susa III-type tablets were found in the major Middle Banesh buildings of Malyan, both in ABC Building Level 3 and in area TUV (Figures 7.22, 7.25) (Stolper 1985; Dahl *et al.* 2013: 358, 373–375; Potts 2016: 75–76). They have been described as "in exact uniformity with texts from Susa" (Damerow and Englund 1989:

Figure 7.24 Tal-i Malyan, TUV operation from the air, looking west. Building level III in the foreground (after Nicholas 1990: pl. 1).

Figure 7.25 Tal-i Malyan, TUV sealings and Proto-Elamite tablet (after Nicholas 1990: pls 35–36).

22), although only the Susa texts involve very large quantities of animals and people. Tablets at Malyan employ header signs such as the hairy triangle (Sumner 2003: 115) familiar from Susa and Yahya texts, and probably representing an institution or administrative unit of some kind (Damerow and Englund 1989: 61). They correlate well with the later Proto-Elamite texts from Susa, that is from Acropole I 15b-14b (Dahl *et al.* 2013: 374; Dahl 2019: Figure 3). The quantities of accounted items attested in the Malyan texts do not approach the extremes of the Susa Proto-Elamite records, but they do suggest a greater scale of economic activity than that attested by the Yahya IVC texts (see below; Damerow and Englund 1989: 63, fn 171). The ABC tablets appear to deal with larger quantities than the TUV tablets (Sumner 2003: 116). It is intriguing that the Malyan texts are sealed with stamp seals rather than the cylinder seals used to seal tablets at Susa (Pittman 1994: 69) and, further, that the Malyan tablets are found in the buildings of area TUV (Nicholas 1990: 85, Figure 32) as well as in the grander architectural context of area ABC. One summary text found in ABC is composed of clay similar to those for tablets in TUV (Zeder 1991: 67; Sumner 2003: 82; Zeder and Blackman 2003: 137), suggesting that the TUV administrative unit reported to the ABC unit, and that therefore there existed at least two levels of administrative hierarchy at Malyan, *contra* Alden's (2013: 229) suggestion of a lack of administrative hierarchy based on the sealing evidence. As with Proto-Elamite texts from other sites, the Malyan tablets appear to deal with the accounting of purely local economic and agricultural activities.

The recovery of Proto-Elamite tablets, clay sealings with cylinder and stamp impressions, sealed hollow clay balls and geometric tokens from well-defined contexts in area TUV is striking. We should note that, according to the meticulous excavation and recording methods employed at Malyan, all of the tablets and sealings come from what are defined as secondary and mixed contexts, i.e. from rubbish disposal in rooms or in pits rather than as *in situ* finds on floors, and therefore do not necessarily relate directly to the function of their architectural contexts (Nicholas 1990: Figure 32). There are, however, good parallels for the occurrence of the full range of administrative paraphernalia within similar architectural contexts in third millennium BC Mesopotamia, such as the Early Dynastic III texts, seals and sealings from the Sumerian site of Fara (Matthews 1991). Ilene Nicholas (1990: 119) argues that the compartmentalisation and scale of evidence for craft and other activities in area TUV at Malyan suggest "the controlling influence of a supra-familial institution" operating at the site level. While accepting that people were living and eating in at least part of the TUV building complex, Nicholas (1990: 120) proposes that "the institution using this structure was an administered one. Account tablets were written, sealed goods were opened and disbursed, and large numbers of bevelled-rim bowls and low trays, plus lesser numbers of goblets, were utilized."

Noting the association of administrative artefacts with high quantities of bevelled-rim bowls and trays in the western unit of TUV building level III, Nicholas (1990: 128, italics in original) makes the intriguing suggestion that "those vessels were being *brought* to the administrators' building, but as tax-containing bowls rather than votive bowls." She suggests that the TUV complex represents a governmental control centre for the receipt of taxes in the form of goods in vessels as well as perhaps other commodities including animals. In this scenario, the administrative complex of area TUV was probably subordinate to the major complex of area ABC on the main mound at Malyan, a relationship later materialised in the construction of the city wall in the Late Banesh phase. By contrast, Zeder (1991: 128) argues that the mass-produced pots in the western unit of TUV III relate to preparation and serving of food from an institutional kitchen, an interpretation that more reasonably accounts for the mass of broken mass-produced vessels in this part of TUV. In Zeder's argument, the sealings and tablets in TUV relate to basic accounting of goods disbursed to the TUV kitchen from a central authority, while the possible transfer of one summary tablet from TUV to ABC indicates "that activities conducted at TUV were monitored by the elite Banesh residents of these large buildings" (Zeder 1991: 129). Nicholas's and Zeder's interpretations are not in fact mutually exclusive – it is possible that the mass-produced vessels and the artefacts of storage, recording and accounting at TUV level III were used both in a system of tax or tribute payment to a centralised authority as well as in a system of institutionalised kitchen provisioning.

Proto-Elamite scribes and administrators were all doing the same thing regardless of where in Iran they were working – counting animals and pots of dairy products, tallying sacks of grain and measuring allotments of arable land. It is important to note that nowhere at Malyan do we find texts of Late Susa II type such as those found at Susa Acropole I levels 18-17 (Stolper 1985: 5), and that therefore there are no grounds for arguing for an *in situ* development at Malyan of the Proto-Elamite/Susa III writing style or of the featured numerical systems. Only Susa boasts such evidence (see above). This is not the same as saying that the Proto-Elamite language (if such existed) could not have had its home and its origin at Malyan and elsewhere in Fars, and then been carried thence to Susa where it was inserted into the existing administrative tradition in written form.

Large quantities of animal bones were recovered from areas ABC and TUV, and they have been superbly analysed in the rich study by Melinda Zeder (1991; Zeder and Blackman 2003), a model of how to recover, record, analyse and publish a large animal bone assemblage (*c.* 100,000 bones) within a theoretically informed and intellectually stimulating context. The bone assemblages of both ABC and TUV are dominated by sheep and goat, at 99% in ABC and 97% in TUV, with goats outnumbering sheep by 2:1 in both areas (Zeder 1991: 137). Furthermore, Zeder (1991: 162–163) makes the important suggestion that "The almost exclusive reliance on caprid meat in the Banesh phase suggests, however, that the primary suppliers of urban meat resources specialized in sheep and goat management – an indication that nomads were the primary suppliers of Banesh meat resources." She also proposes, on the basis of kill-off age patterns, that goats were used principally for meat while sheep were used for milk and wool as well as for meat. Domestic cattle are the only other regular meat animal, while equids appear to be mainly beasts of burden. Residents of area ABC consumed meatier cuts of animals than residents of area TUV (Zeder 1991: 152; Zeder and Blackman 2003: 128).

Despite rigorous sampling programmes, recovery of charred plant remains was poor and appears to be mainly from burnt animal dung, with barley the preferred fodder (Miller 2003: 13, 2011). Naomi Miller (1982, 1985) estimates that the agricultural capacity of the environs of Malyan was sufficient to support a population of at least 5,000 individuals who may have been living at the site during its heyday, and she surmises that this substantial population was responsible for massive deforestation of the environs of Malyan. The rise of Malyan to regional dominance can be attributed to a combination of its hinterland agricultural capacity, the availability of good pasturage and its proximity to natural passes used to access the Kur river valley by seasonally mobile pastoral groups (Zeder 1991: 68).

In the Late Banesh phase, contemporary with Susa Acropole I levels 14A–B, a massive mudbrick city wall was constructed at Malyan, enclosing a total area of 200 ha (Figure 7.18) (Sumner 1985). Its construction is radiocarbon dated to 2,970 ± 70 BC (Sumner 1985: 159). This impressive wall consists of parallel mudbrick walls filled with brick packing, reaching a total length of 5 km. Whatever its function, and a defensive one seems likely (Sumner 1986a: 209), this wall represents an enormous investment of human labour, which Sumner calculates as totalling a minimum of 140,000 person-days, so that the wall could have been built by 1,000 labourers over 140 days of late spring/summer, for example (Sumner 1985: 159). Such figures bring to mind the labour gangs of at least 1,774 people listed in individual Susa Proto-Elamite texts (see above). Given Sumner's (2003: 112) estimate of a minimum of 4,000 people in total at Middle Banesh Malyan, it is likelier that construction of the wall took place over more than one year. In any case, this scale of construction demonstrates the administrative ability for that labour to be summoned, organised and deployed in the realisation of major public ventures. This ability in turn argues for a sophisticated and well-adapted system of public government in place at Malyan certainly by the Late Banesh phase at the latest. As to the nature of occupation within the 200 ha enclosed by the city wall, Sumner speculates that at least 100 ha of it would have been "fortified empty space: whether for gardens, flocks, a fortified refuge for villagers, for planned expansion of the city, or simply as a monument to the power of the local ruler" (Sumner 1985: 159). From *c.* 2800 BC much of Malyan was abandoned and there was a hiatus in settlement in the valley for up to 500 years until a resurgence of occupation in the Kaftari phase from 2400 BC (Sumner 2003: 54–55; Miller and Sumner 2004). Elsewhere in Fars, there has been limited excavation of levels datable to Proto-Elamite at the sites of Tal-e Kureh (Alden 2003c; Alden and Petrie 2015), Nurabad and Spid (Weeks *et al.* 2009).

The Proto-Elamite horizon in eastern Iran

Tepe Yahya in Kerman: fortified foreigners?

Proto-Elamite materials, including inscribed tablets, have been excavated at two important sites in eastern Iran, at Tepe Yahya in the Soghun valley of Kerman province and at Shahr-i Sokhta in Sistan (Figure 7.2). Of the two sites, we have a richer understanding of Yahya than we do of Shahr-i Sokhta in the Proto-Elamite horizon. In fact, the Proto-Elamite levels of **Tepe Yahya** have become some of the best published materials with which to examine this phenomenon, thanks to work by the excavator, Karl Lamberg-Karlovsky (1971, 1972, 2001b) and his colleagues Daniel Potts (2001) and Benjamin Mutin (2013a; Mutin *et al.* 2016) amongst others. The location of the site of Yahya is significant in that it lies at the south-eastern extremity of the Proto-Elamite world (Figure 7.2).

We saw in Chapter 6 how Tepe Yahya was abandoned for up to 500 years after the Chalcolithic settlement of level VA (Mutin 2013a: 187). Level IVC at Yahya was originally seen as comprising two phases, IVC2 (earlier) and IVC1, which Lamberg-Karlovsky estimated as together enduring for less than a century and therefore representing "a settlement "event," a community bearing little resemblance to the material culture which preceded and followed it" (Lamberg-Karlovsky 1989: viii). In his publication of the Yahya third millennium levels, Potts (2001: 1–14) argued that levels IVC2 and IVC1, as defined by Lamberg-Karlovsky, could be combined as one phase. Lamberg-Karlovsky (2001b: 270) has proposed a dating within the range *c.* 3100–2800 BC for Yahya IVC, while Potts (2001: 196) and Dahl *et al.* (2013; Petrie 2013a: 146; Mutin *et al.* 2016: 851) argue that the very late style of the Yahya Proto-Elamite tablets, found in the IVC buildings (see below) indicates a dating at the end of the Proto-Elamite horizon at *c.* 2900–2800 BC. In either case, the occupation is relatively short-lived and is sandwiched between substantial episodes of abandonment. Potts (2001: 200–201) argues that Yahya was abandoned for at least 500 years after the end of the Proto-Elamite occupation of the site.

It is also striking that there appears to have been a collapse in rural settlement of the region during the Proto-Elamite occupation at Yahya, as at Malyan. According to Martha Prickett's surveys, only Yahya itself and one other site were occupied during the IVC phase across the whole Shah Maran and Daulatabad basin (Prickett 1986b: 237; Lamberg-Karlovsky 1989: viii; Mutin 2013a: 176–177). To the north, the Bardsir plain around Tal-i Iblis also experiences a major decline in settlement in the phase contemporary with Yahya IVC (Prickett 1986b; Sajjadi 1987; Mutin 2013a: 184). In the Halil Rud valley to the east of Yahya, following the rich evidence for a Late Chalcolithic/Late Susa II presence as attested at Mahtoutabad (Chapter 6; Desset *et al.* 2013) there is little indication of early third millennium BC settlement (Mutin 2013a: 178). A single example of a seal impression of "City Seal" type (Matthews and Richardson 2018), found in undated deposits at Konar Sandal South in the Halil Rud valley (Madjidzadeh and Pittman 2008: 99, Figure 32:e), hints at the possible engagement of this region in a network of international interaction at around 2900 BC. It is particularly notable that the city name of Ur itself appears to be represented by a ligature motif on the Konar Sandal South seal impression (Chapter 9).

Level IVC certainly marks a major reorientation of multiple aspects of material culture at Yahya, just as the Proto-Elamite levels do at Susa and at other sites of this extraordinary Early Bronze Age phenomenon. At Tepe Yahya the mudbrick architecture of IVC is formally laid out on the summit of the mound in a series of rectilinear rooms surrounded by open areas and with well-constructed drainage (Figure 7.26). The Proto-Elamite settlement at Yahya was excavated over an area of almost 500 m^2, but it is likely that occupation covered the full 2 ha of the site. A large mudbrick wall, up to 2 m wide in places, runs parallel to the main IVC building at some distance from it, probably serving as a circumvallation or fortification wall for the entire Proto-Elamite settlement on the mound's summit (Lamberg-Karlovsky 1989: v). Thus, not only is there rural abandonment across this region at the start of the Early Bronze Age, but there is also the fortification of at least some of the few settlements that do exist, both features suggestive of an atmosphere of instability and conflict. The fact that multiple valuable items were left on the floors of the IVC buildings, with no later return to claim their possessions, suggests a sudden departure by the inhabitants (Lamberg-Karlovsky 1989: vi), also indicative of a hostile atmosphere at the very end of the Proto-Elamite occupation of the site. Finds on the upper floors of rooms in levels IVC appear to be contemporary and can be treated together. Beale and Carter (1983) have shown that the Yahya IVC building was constructed according to a standard unit of measure, equivalent to 72cm, which corresponds to that used for similar buildings at the Late Chalcolithic site of Habuba Kabira in Syria, some 2,500 km distant from Tepe Yahya. The architectural value of the 72cm unit (or "Yahya large kuš," as Beale and Carter call it, after a Sumerian measurement known from the late third millennium BC) lies in the fact that it equals 1.5 times the length and three times the width of the standardised mould-made mudbricks used in construction at Yahya. Beale and Carter's discovery is quite sensational as it indicates a sophisticated development of the craft and theory of architecture. As they put it,

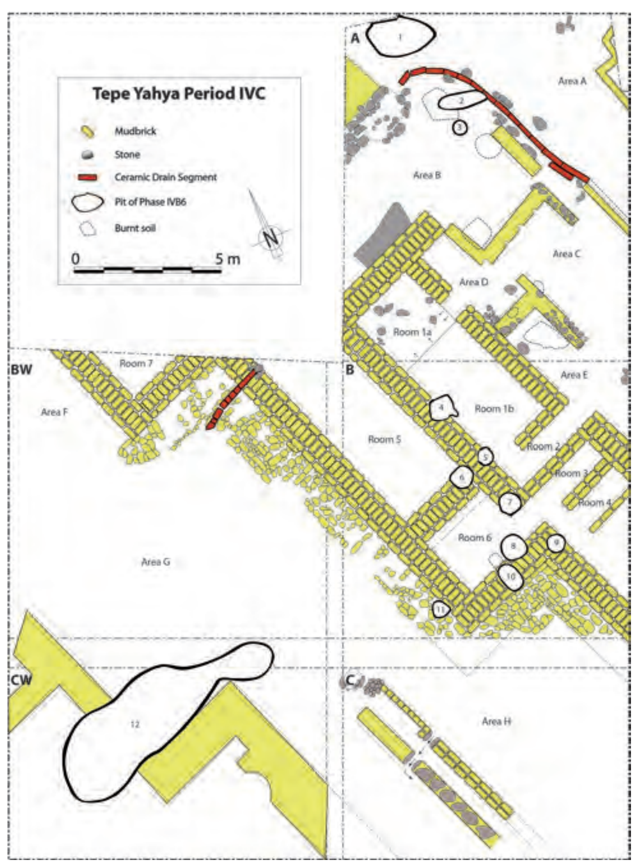

Figure 7.26 Tepe Yahya, period IVC architecture (Mutin 2013a: Figure 2.2) (image courtesy of Benjamin Mutin).

> The widespread appearance in this period of an exact measuring system marks a profoundly important turning point in the history of architecture. It gave would-be architects independence from building styles and plans based on 'tradition'...For the first time, each new building could, in a very real sense of the word, be 'designed'.
>
> (Beale and Carter 1983: 88)

But how do we explain the connection with architectural conformity at Habuba Kabira, so far away to the west? Searching for an answer takes us back to Susa and to the evidence there for continuity across the Late Chalcolithic/Early Bronze Age divide, as well as to Susa's connectivity both with Habuba Kabira and with Tepe Yahya. As we saw in the previous chapter, there are numerous strong material culture connections between Susa and Habuba Kabira, and other contemporary sites, in the Late Susa II/Late Uruk period. Connections between Susa in the Susa III period and Yahya IVC are multiple and obvious in many aspects of material culture, including specifics of writing, sealing, ceramics and items of adornment, as discussed in this chapter. As to continuity of use of the "large kuš" unit of measurement into the Proto-Elamite horizon, it seems that the architectural skills of Late Susa II builders and planners were as valued by the new Proto-Elamite elite as were capabilities in administration by means of written records and the use of certain pottery forms in high-status cuisine and/or in distribution of rations to labour gangs. The Proto-Elamite elite chose to maintain selected elements of the Late Uruk/Late Susa II world, and skill in the design and construction of formal buildings was clearly one of those selected elements. If Lamberg-Karlovsky (1978) and Potts (2001: 198) are correct in seeing Susa as the homeland of the settlers in level IVC at Yahya, their argument reinforces the picture of connectivity of the Proto-Elamite world and its origin within the world of Susa in the Late Susa II period. Even if the Proto-Elamite elite originated from elsewhere, and Malyan is the only other serious candidate, the evidence for connectivity and for Susa's key role across space and time remains unchanged.

As important as the building itself in level IVC at Yahya are the contents of that building (see Mutin 2013a: 145–167 for small finds from Yahya IVC). Strewn across the floors of the IVC building, and of the adjacent rooms, were inscribed clay tablets, tablet blanks, clay sealings with cylinder seal impressions, clay "slingballs," pottery storage vessels, a metal vessel containing the mineral natrojarosite (Reindell and Riederer 1979; Lamberg-Karlovsky 1989: vi), a metal spearhead, an alabaster vessel and what are described as "two large biconical heulandite beads" (Figure 7.27) (Lamberg-Karlovsky 1989: vi; Potts 2001: 10–11). The presence of these latter, found in room 1 of the IVC building (Mutin 2013a: 153, Figures 4.13, 4.15), is notable in view of the fact that heulandite was a favoured material for the manufacture of Proto-Elamite cylinder seals (see above; Pittman 1992b: 70) and that possible sources of heulandite occur in the vicinity of Tepe Yahya (Sax and Middleton 1989: Figure 1). Overall, the small finds from Yahya IVC indicate a concern with bodily ornamentation and decoration, plant cultivation, hunting and fishing, as well as with a range of basic craft activities (Mutin 2013a: 164–167). They also demonstrate the wide connectivity of the Yahya IVC community in terms of access to a range of valued resources, including metals (Figure 7.28) (Thornton and Lamberg-Karlovsky 2004: 51), shell and semi-precious stones, originating from across Iran, south-eastern Turkey, Afghanistan, western Pakistan and the Persian Gulf (Mutin 2013a: Figure 4.29).

In his immaculate publication of Yahya IVC pottery, Mutin identifies a range of "geographical spheres of influence" (Mutin 2013a: 48; see also Lamberg-Karlovsky 1972: 95–99), including the Proto-Elamite component, a south-eastern Iranian plateau group with connections across Iranian Sistan-Baluchistan as well as Pakistani Kech-Makran (Figure 7.29), and a northern Iran group. These ceramic connections and their putative spheres of influence usefully fill out the interpretive framework of third millennium BC interaction spheres first articulated by Caldwell (1964) and Lamberg-Karlovsky and Tosi (1973), contextualising the Proto-Elamite horizon within broader patterns of social and economic interaction across Iran and neighbouring regions. Instrumental neutron activation analysis of ceramics from Yahya IVC and the following IVB periods (Chapter 9) demonstrates production from clays local to the Soghun valley for the vast majority of Proto-Elamite vessels from level IVC (Kamilli and Lamberg-Karlovsky 1979), while the clays of sherds in the Baloch-style, a ceramic tradition found in the east of Iran at Shahr-i Sokhta, Iranian Baluchistan and the Kech-Makran region of Pakistan, suggest import of these vessels and the engagement of the community at Yahya in transregional networks reaching well to the east (Mutin *et al.* 2016). The presence at Yahya IVC of significant quantities of Burnished Ware, also locally made and using the same paste preparation procedures as the Proto-Elamite ceramics at Yahya, has stimulated the intriguing suggestion that there may have been some blending of Early Transcaucasian Culture-related (ETC; Chapter 8) and Proto-Elamite communities prior to their arrival at Yahya in period IVC (Mutin *et al.* 2016: 860).

Figure 7.27 Tepe Yahya, heulandite beads from period IVC (© 2013 President and Fellows of Harvard College; Mutin 2013a: Figure 4.13) (photo credit: Benjamin Mutin).

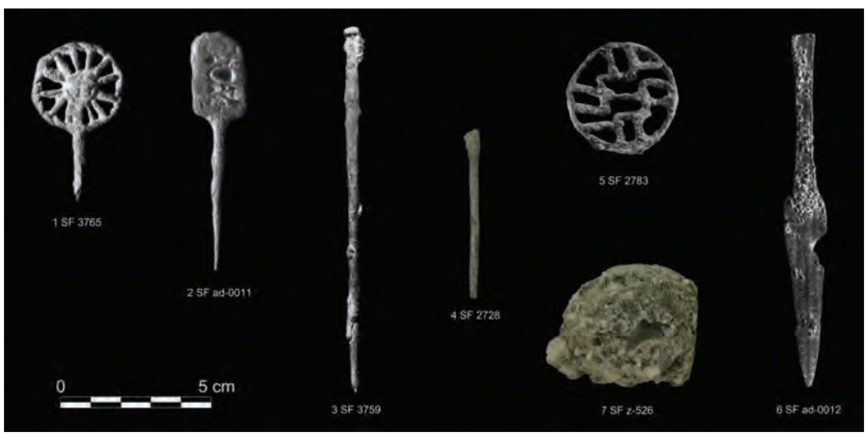

Figure 7.28 Tepe Yahya, copper objects from period IVC (© 2013 President and Fellows of Harvard College; Mutin 2013a: Figure 4.25) (photo credit: Benjamin Mutin).

Yahya IVC pottery has good parallels with assemblages from Fars in the Middle Banesh phase (Potts 2001: 6–53, 195–199; Petrie 2013a: 149) and with Mesopotamian assemblages of Late Uruk date (Mutin 2013a: 57), in particular in forms that often continue from Late Susa II times such as bevelled-rim bowls, trays, footed goblets and spouted vessels, typical of the Proto-Elamite horizon across Iran. The occurrence of multiple bevelled-rim bowls (Figure 7.30) connects the site, in some way, with at least 100 other sites in Iran and as far east as Baluchistan in Pakistan where bevelled-rim bowls have been found, although only at the sites of Susa, Chogha Mish and perhaps Malyan are they found in the vast quantities attested at Lower Mesopotamian sites such as Uruk, Eridu and Ur (Benseval 1997; Potts 2009; Mutin 2013a: 62). Painted jars from Yahya IVC show morphological and decorative parallels with late fourth-early third millennia BC assemblages from Susa, and from Jemdet Nasr and other Lower Mesopotamian sites as well as with the Diyala and Hamrin regions of central-east Iraq and other adjacent regions (Matthews 1992; Mutin 2013a: 77–83), while Mutin's analysis is uniquely careful enough to distinguish Late Uruk and Early Dynastic I materials from Jemdet Nasr period materials when making comparisons to published examples from the multi-period site of Jemdet Nasr (see discussion above). Other ceramic types at Yahya, including painted and burnished vessels, fit more into a south-eastern Iran context and there are also ceramic connections to assemblages from further east, through the Bampur valley of Iranian Baluchistan and into south-western Pakistan (Mutin 2013a: 88–90, 2013b: 267–269; Petrie 2013a: 149). In sum, the ceramic and small find assemblages from Yahya IVC constitute evidence for considerable connectivity of the Proto-Elamite community living and working at Tepe Yahya.

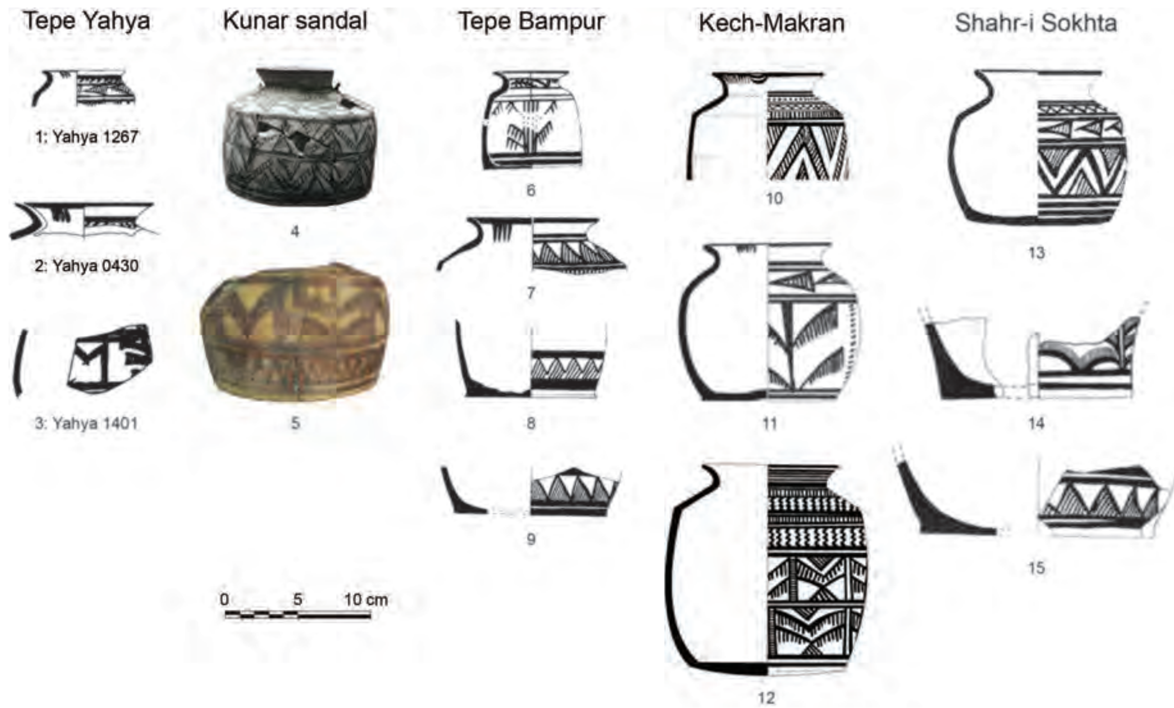

Figure 7.29 Tepe Yahya, canister-jars with parallels from sites to the east (Mutin 2013a: Figure 3.116) (image courtesy of Benjamin Mutin).

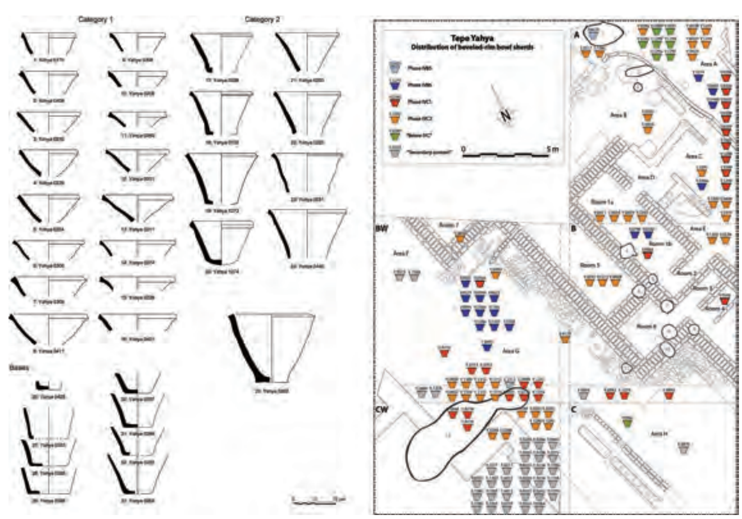

Figure 7.30 Tepe Yahya, bevelled-rim bowls and their distribution across period IVC (Mutin 2013a: Figures 3.3–3.4) (image courtesy of Benjamin Mutin).

A total of 27 clay tablets with Proto-Elamite inscriptions were found in Yahya IVC (Figure 7.31). They have been excellently published by Damerow and Englund (1989; see also Dahl *et al.* 2013: 358–359; Mutin 2013a: 169–172, Figures 5.1–5.2). The tablets were recovered from rooms 1 and 5 of the IVC building as well as in adjacent areas to the east (Figure 7.32) (Mutin 2013a: Figure 5.3). A deposit of 84 possible tablet blanks lay on the floor in the corner of room 5 (Damerow and Englund 1989: 62). Of the 27 inscribed texts, 21 concern the distribution of grain and land allotments to specific individuals, four are accounts of sheep and goat, and one deals with distribution of grain to a group of female workers. The grain texts mainly deal with the issue of rations of grain to feed workers for periods varying from one to 30 days, while larger volumes of grain may relate to accounting of entire harvests (Damerow and Englund 1989: 31–32).

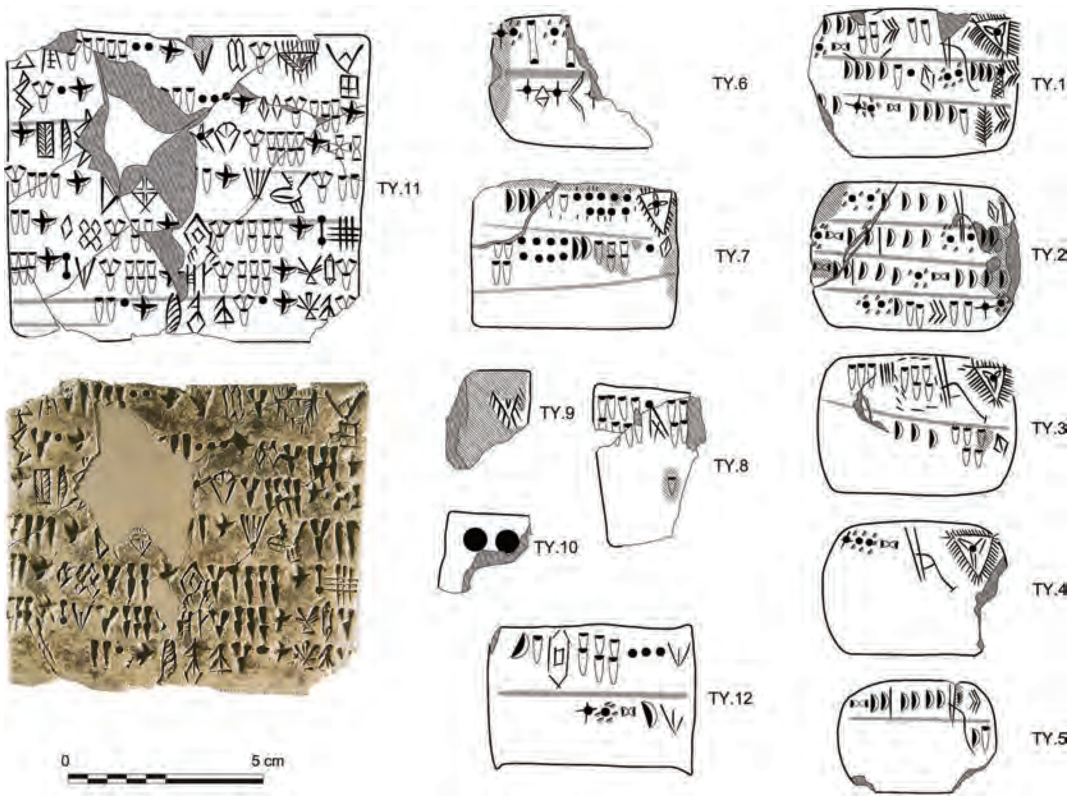

Figure 7.31 Tepe Yahya, selected Proto-Elamite tablets from period IVC (after Damerow and Englund 1989; Mutin 2013a: Figure 5.1; Nokandeh 2017: Figure 30) (photo credit: Neda Hossein Tehrani and Nima Mohammadi Fakoorzadeh).

Figure 7.32 Tepe Yahya, distribution of Proto-Elamite and blank tablets across period IVC (Mutin 2013a: Figure 5.3) (image courtesy of Benjamin Mutin).

The Yahya IVC texts are “in full accord with the complexity and structure of the proto-elamite texts from Susa” (Damerow and Englund 1989: 15), even if the immense quantities of animals and humans attested at Susa do not feature in the Yahya texts. Indeed, several of the signs used as headers at Susa are found also at Yahya, including the hairy triangle, interpreted by Damerow and Englund (1989: 16) as the symbol of an institution. Minor variations in certain number signs at Yahya, as compared to the same signs at Susa, suggest that the Proto-Elamite script was conveyed (by people?) in standardised form from Susa to Yahya where “smallish attacks on graphic conventions were undertaken” (Damerow and Englund 1989: 30). The numerical systems attested at Yahya include the ŠE system and probably the sexagesimal, bisexagesimal and decimal systems. In addition to the inscribed tablets, it is notable that Proto-Elamite signs, including the hairy triangle, are found incised on the shoulders of ceramic jars from Yahya (Mutin 2013a: 83–84, Figure 3.34) and from Arisman (Helwing 2011a).

As Damerow and Englund (1989: 62) stress, the Yahya IVC texts deal with the administration of a purely local economy with no indication of engagement beyond the immediate environs of the site. The question must then be – why employ writing at all? As discussed above, only at Susa do we have Proto-Elamite texts that record activities involving huge numbers of people and animals, situations in which it might indeed be useful, even essential, to employ writing as a means of maintaining orderly records. At all other sites with texts, the quantities involved are modest and a system of writing would not be essential in order to keep account of incomings and outgoings. The answer must be that it was the system of administration that mattered more than the scale of its content. Careful accounting of modest quantities of animals, fields and rations makes sense only in a context of respect, enforced or otherwise, for a bureaucratic system itself. Communities of late fourth millennium BC Iran had familiarity with such a system from their encounters with Late Uruk/ Late Susa II Mesopotamia and Khuzestan (Chapter 6), and they adapted that system to their own ends in the centuries around 3000 BC, taking on most of the numerical systems of the Uruk world but employing a new script that was tied to their own language rather than to that of Lower Mesopotamia. In the end, the use of writing (and sealing) at Yahya IVC, as at all Proto-Elamite sites, was about the control of rural production, land and resource distribution, and human labour by a cadre of administrators capable of securing local participation in their bureaucratic system through successful construction and imposition of a specific ideology. The wide-ranging reach of that ideology, short-lived as it was, is demonstrated by the fact that Proto-Elamite texts and glyptic iconography, along with many other components of material culture, are remarkably similar across the span of the Proto-Elamite horizon.

In addition to written texts, the world of seals and sealing was also intimately enmeshed in a Proto-Elamite ideology of bureaucratic control. As we have seen in our discussion of Susa III glyptic above, Proto-Elamite seals are characterised by an avoidance of human representation and a vivid use of animal motifs often adopting apparently human postures. The glyptic from Yahya IVC comprises two cylinder seals and 43 seal impressions, with both the classic figured style and the glazed steatite style well represented (Figure 7.33) (Pittman 1994: 98–102, 2001b; Mutin 2013a: 170–172, Table 5.2, Figures 5.4–5.6). Only two of the 27 inscribed tablets have seal impressions. Other seal impressions occur on clay sealings, both container and door closing devices, indicating a concern to control access to storage facilities within the IVC building. A concentration of jar sealings in rooms

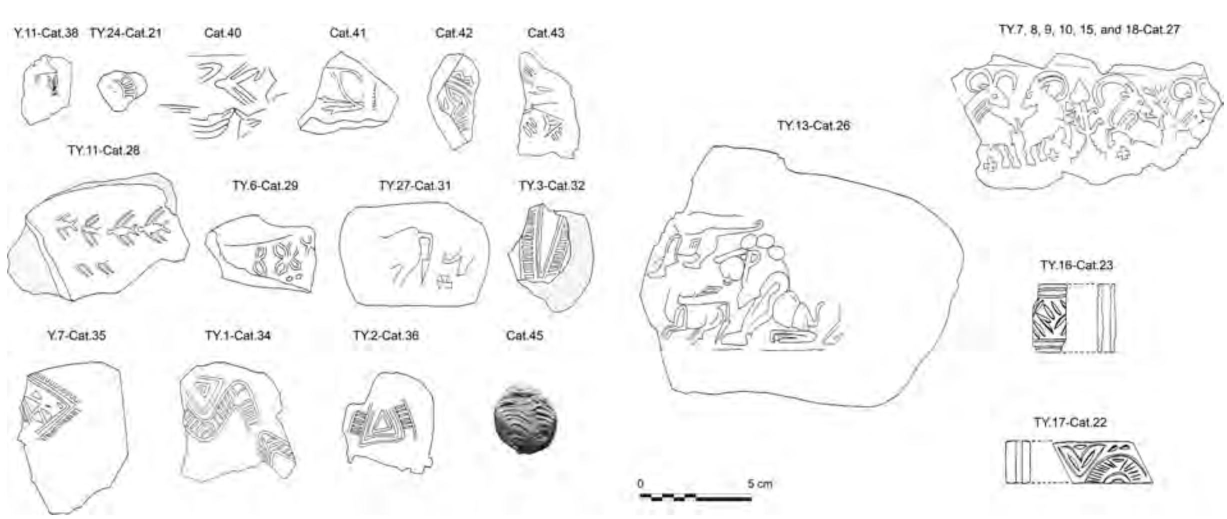

Figure 7.33 Tepe Yahya, seals and seal impressions from period IVC (Mutin 2013a: Figure 5.5) (image courtesy of Benjamin Mutin).

3–4 confirms their use as storerooms. The iconography of the Yahya Proto-Elamite glyptic shows multiple points of connections with seals and seal impressions from contemporary Susa and Tal-i Malyan (Pittman 2001b: 232). The chunky cross symbol, a common Proto-Elamite motif in multiple media, appears on at least three different sealings at Yahya. Overall, the decline in association of seal use with writing and its concomitant increased association with sealing of containers and store-room doors, as discussed for the Susa evidence above, is fully supported by the Yahya IVC glyptic materials.

The inhabitants of Yahya IVC made extensive use of fully domesticated cereals and goats in their diet, with sheep and cattle of lesser significance (Meadow 1986: tables 3.2, 3.4; Mutin 2013a: 166). They hunted wild animals including bear, fox, mongoose, lion and a range of birds, but their subsistence was essentially agricultural and pastoral. An increase in use of flint sickle blades in level IVC, as compared to preceding levels, suggests an intensification of agricultural production (Piperno 1973). In sum, the inhabitants of Proto-Elamite Tepe Yahya consisted of some 15–20 extended families (Lamberg-Karlovsky and Tosi 1989), whose rural and economic lives were to some extent monitored and controlled by a protoliterate element of society, arguably representing the implantation of "foreign colonies or outposts" (Petrie 2013a: 151; see also Mutin 2013a: 194–195). Their time was spent largely in agricultural production and animal husbandry in the Soghun valley. They had sophisticated knowledge of building techniques in mudbrick and probably in wood too (Mutin 2013a: 191). The ceramic assemblages suggest both local production and probably also some long-distance movement of selected wares, principally of Proto-Elamite style from central and western Iran, but also showing connections to the east and north (Mutin 2013a: 192–193). Small finds also show participation in a network of regional movement of cherished materials, and perhaps also of finished artefacts, but only on a small scale. The evidence for on-site working of imported exotic materials is also quite modest, and Piperno (1973: 71) has noted that a lack of lithic micro-drills from Yahya IVC suggests that bead-working was not a major activity at the site.

Lamberg-Karlovsky (1971; Mutin 2013a: 195–196) has suggested that Yahya IVC was occupied only seasonally, during the summer months, by populations migrating from the extremely hot regions of the Halil Rud, an interpretation also applied to Proto-Elamite Malyan by John Alden (2013). This pattern of occupation might account for the use of sealings to secure possessions in rooms during the absence of much of the population with their animals. Seasonal movements over substantial distances would be one way for Proto-Elamite communities to maintain contacts with each other and to engage in exchange and social interactions. Such a system would have ensured optimum use of both lowland and highland resources by human groups and their herded animals, goat and sheep above all.

After no more than 100–150 years (Mutin 2013a: 187), the IVC building at Yahya was abandoned, apparently in some haste according to the quantities of valuable objects left lying on the building's floors (Lamberg-Karlovsky 1989: vi). While there is debate about exactly how long after this time Yahya lay empty, perhaps up to 500 years (Mutin 2013a: 189–190), there is no doubting a serious rupture in occupation at Yahya following the collapse of the Proto-Elamite horizon at the site. We do not know whether the abandonment of Yahya IVC was brought about by locals, perhaps objecting to imposed foreign rule, by incursions from outside, or a by decision by the Proto-Elamite inhabitants to move away. Northwards from Yahya, ceramics from **Tal-i Iblis**, period VI, show limited Proto-Elamite affinities amongst local and Uruk- or Late Susa II-related materials (Mutin 2013a: 29).

Shahr-i Sokhta: over the Proto-Elamite horizon?

Located some *c.* 600 km northeast from Tepe Yahya, the site of **Shahr-i Sokhta** ("Burnt City") in Iranian Sistan shows attenuated links with the Proto-Elamite world (Biscione *et al.* 1977; Amiet and Tosi 1978; Amiet 1983). A single Proto-Elamite clay tablet was found in an area of domestic architecture at Shahr-i Sokhta period I, level 10, along with about 20 clay sealings and cylinder seals (Figure 7.34) (Amiet 1983; Dahl *et al.* 2013: 359–360; Ameri 2020). The tablet belongs to the late writing phase, according to Dahl's schema (Dahl *et al.* 2013: Figure 18.17), and it bears a classic style seal impression (Pittman 1994: 104). Most of the seals and seal impressions correlate well with examples from Susa Acropole I levels 16-13, including the glazed steatite style, while others represent local iconographic traditions (Amiet and Tosi 1978). There are also seals carved in stones of heulandite type, a material favoured by Proto-Elamite glyptic engravers as discussed above (Amiet 1983: 204). Their presence at Shahr-i Sokhta confirms a role for the site in access to, and working of, cherished raw materials for trans-shipment westwards into the Proto-Elamite world.

The ceramics of Shahr-i Sokhta, by contrast, show strong parallels with assemblages from regions to the east, including southern Turkmenistan and the Kech valley of south-western Pakistan (Mutin 2013a: 30–41). These assemblages attest Early Bronze Age cultural interactions beyond the world of the Proto-Elamite horizon, spanning the uplands and plains of the Indo-Iranian borderlands and the remoter still areas of southern Turkmenistan, Afghanistan and south-western Pakistan. The early third millennium BC materials from Shahr-i Sokhta do not indicate the presence of a Proto-Elamite settlement at this site, but rather the participation of some people at Shahr-i Sokhta in long-distance interactions with their Proto-Elamite contemporaries to the west (see Chapter 9).

Figure 7.34 Shahr-e Sokhta, period I seal, sealing and Proto-Elamite tablet (Ameri 2020: Figure 2) (images courtesy of Marta Ameri and ISMEO).

Proto-Elamite presence in north-central, north-east and central Iran

In 1992 Holly Pittman presciently wrote that "Future investigations will undoubtedly reveal a substantial Proto-Elamite presence along the northern route skirting the edge of the Kavir Desert" (Pittman 1992b: 69). Her argument was that the import of cherished commodities such as lapis lazuli from the east would underpin the significance of the north Iran route for transregional communication and interactions of Proto-Elamite communities. Discovery of a single Proto-Elamite tablet associated with a large platform at **Tepe Ozbaki** on the Savajbulaq Plain west of Tehran (Majidzadeh 2001: 141–145; Vallat 2003) indicates a Proto-Elamite administrative presence, at least, on a major plain close to the Alborz range in north-central Iran. The Ozbaki text deals with herds of sheep and goat, using signs "entirely analogous to those found at Susa" (Dahl *et al.* 2013: 373), and is dated to the middle Proto-Elamite writing phase by Dahl *et al.* (2013: Figure 18.17). Excavations at **Meymanatabad**, southeast from Ozbaki in Tehran province, uncovered remains of a substantial mudbrick building overlying layers of mid-fourth millennium BC date with ceramics suggesting significant continuity from Late Uruk/Late Susa II into Proto-Elamite (Yousefi Zoshk *et al.* 2015).

Most germane to Pittman's prediction is the discovery of a major Proto-Elamite site at **Tepe Sofalin** ("Pottery Mound"), located 35 km southeast of Tehran on the Reyy plain (Figure 7.35) (Hessari and Akbari 2007; Hessari 2011; Dahl *et al.* 2012, 2013; Hessari and Saeedi 2017). Sofalin, with its neighbouring mound of Shoghali, is located on a natural spur close to the timeless northern route, the Great Khorasan Road, which traverses the edge of the Dasht-e Kavir at the point where that route intersects with a major north-south route along the western edge of the central plateau. Significant numbers of Proto-Elamite tablets, at least 16 and possibly up to 137 (Figure 7.36) (Desset 2012: 18; Dahl *et al.* 2012; Desset 2016) were found at Sofalin in area H14, in association with large quantities of clay sealings with cylinder seal impressions, tablet blanks, clay tokens, figurines, bevelled-rim bowls, low-sided trays and painted pottery, with significant evidence for on-site pottery production (Hessari 2011; Fazeli Nashli *et al.* 2013b: Figure 7.24; Hessari and Yousefi Zoshk 2013).

Materials from several periods appear to have been dumped together at Sofalin, making a chronological assessment of the finds especially difficult. In addition to the Proto-Elamite texts there is a hollow clay ball with a token as well as numerical tablets comparable to those of Susa Acropole I levels 18-17A, demonstrating Sofalin's significance for Late Uruk/Late Susa II connections across the great north route prior to the Proto-Elamite horizon (Chapter 6). In Dahl's schema (Dahl *et al.* 2013: Figure 18.17), the Proto-Elamite texts from Sofalin belong to the early, middle and late writing phases, underlining the enduring importance of the great north route for Proto-Elamite interaction across and beyond northern Iran. The Sofalin texts deal with the issue of cereal rations to workers and with herds of sheep and goat, altogether "indicative of the same kind of self-sufficient community which has been suggested for the other sites with proto-Elamite tablets such as Tape Yahya and Tape Malyan… entirely within the range of a local administration" (Dahl *et al.* 2012: 69). Along with the inscribed tablets, some 3,000 clay sealings were found at Sofalin (Figure 7.37), showing multiple points of comparison with Proto-Elamite seal iconography from Susa, including the glazed steatite style, with much rarer occurrence of Central Asian stylistic traits (Hessari 2011: Figure 17; Hessari and Yousefi Zoshk 2013: Figure 7). Infant jar burials at Sofalin and Shoghali are comparable to contemporary examples at Ozbaki, Malyan and Arisman (Hessari and Saeedi 2017).

Figure 7.35 Tepe Sofalin and Shoghali, satellite image (Hessari and Saeedi 2017: Figure 2) (image courtesy of Morteza Hessari).

Figure 7.36 Tepe Sofalin, Proto-Elamite tablets (Dahl *et al.* 2012: Figures 5–7; Hessari and Saeedi 2017: Figure 4) (images courtesy of Morteza Hessari).

The occurrence of three adjacent metallurgical workshop, putatively for silver cupellation, hints at one of the major functions of this extraordinary complex of sites.

Looking eastwards from Sofalin, the site of **Tepe Hissar** has significant evidence for involvement in Late Chalcolithic movement and working of lapis lazuli and other cherished materials, as we saw in Chapter 6 (Thornton 2014). Period II at Hissar is dated to the later fourth millennium BC (Dyson 1987: 655, 2009; Thornton *et al.*

Figure 7.37 Tepe Sofalin, clay sealings with seal impressions (Hessari and Saeedi 2017: Figures 3, 5) (images courtesy of Morteza Hessari).

2013: tables 8.1–8.2; Gürsan-Salzmann 2016), at least partly coeval with the Proto-Elamite horizon. Two cylinder seals show Proto-Elamite affinities (Dyson 1987: 657–660; Pittman 1994: 107), but inscribed tablets from Hissar II are not in the Proto-Elamite style (Dahl *et al.* 2013: 354). The seals at least are likely to be indicative of transregional interactions of Proto-Elamite communities of north and central Iran with Central Asia to the east. As Dyson (1987: 655) puts it: "In period II Hissar became a prosperous trading town filled with craftsmen smelting copper and working exotic materials (gold, silver, lapis lazuli, carnelian, turquoise, alabaster, etc.)." But Pigott (1999: 86) has underlined the considerable conservatism evident in the metal-working technology of Hissar across many centuries, presumably due to the ongoing success of tried and tested methods of production. It is striking that there is no evidence for tin-bronze anywhere in the Hissar sequence, even after tin-bronze had started to appear further west in Khuzestan and Lower Mesopotamia, leading Pigott (1999: 86) to support

> the notion that tin, which may have been carried from Afghanistan and/or Central Asia to Sumer, either was not moving across the Plateau or was "by-passing" or being "by-passed" by metalworkers in major Bronze Age urban centers on the Plateau.

The significance of the north-south route along the western edge of the central plateau, along the eastern fringes of the Zagros range, is emphasised by a Proto-Elamite presence at evenly spaced sites on this route including Qoli Darvish, Sialk and Arisman (Figure 7.2). Let's look at these sites and regions in turn, moving from north to south. **Qoli Darvish** is located near Qom city at 940 m above sea level, in close proximity to rich natural resources including copper at Veshnaveh 60 km to the south (Vatandoust *et al.* 2011), iron, gypsum, alabaster and chlorite. Much damaged by modern farming and road-building, the site may originally have covered 100 ha (Figure 7.38) (Sarlak 2011; Alizadeh *et al.* 2013b; Fazeli Nashli *et al.* 2013b: 110, Figure 7.25). The Proto-Elamite settlement at Qoli Darvish is constructed on natural soil with four successive architectural levels including substantial rectilinear structures, some of which appear to be non-domestic in character. Phase II5 includes a large

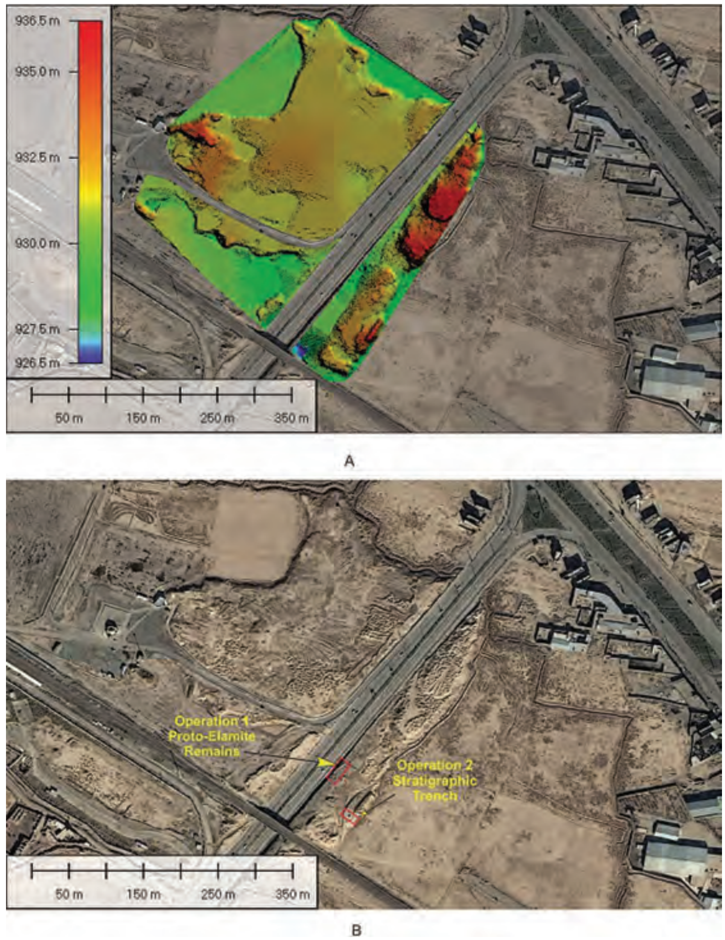

Figure 7.38 Qoli Darvish, satellite image of the site (Alizadeh *et al.* 2013b: Figure 3) (image courtesy of Abbas Alizadeh).

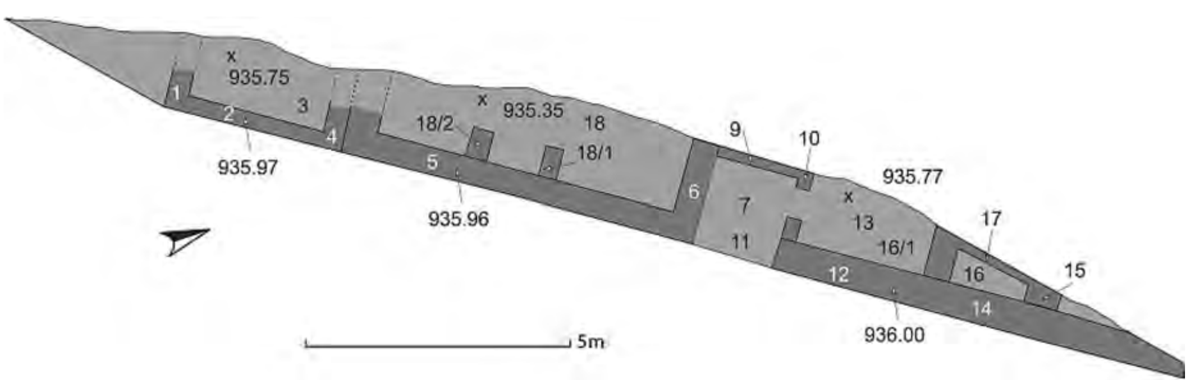

Figure 7.39 Qoli Darvish, plan of phase II5 (Alizadeh *et al.* 2013b: Figure 5) (image courtesy of Abbas Alizadeh).

room with internal buttresses (Figure 7.39) and collapsed wall plaster painted in purple, blue and yellow, as well as typical painted and plain Proto-Elamite ceramics (Figure 7.40). Also found here were five fragments of numerical tablets, simple clay tokens, a hollow clay ball with tokens, a stamp seal and several door and container sealings (Figure 7.41) (Alizadeh *et al.* 2013b: 161, Figure 14). There is significant evidence for metallurgy and flint working in rooms of this complex. In phase II3 there is a jar burial of a child coated in red pigment, similar to

Figure 7.40 Qoli Darvish, Proto-Elamite pottery from phases II3–II5 (Alizadeh *et al*. 2013b: Figure 11) (image courtesy of Abbas Alizadeh).

Figure 7.41 Qoli Darvish, seals, sealings, bulla and numerical tablet fragments from phases II2 and II5 (Alizadeh *et al*. 2013b: Figure 14) (image courtesy of Abbas Alizadeh).

Figure 7.42 Qoli Darvish, plan of phase II2 architecture (Alizadeh *et al.* 2013b: Figure 8) (image courtesy of Abbas Alizadeh).

Proto-Elamite burials at Sialk, Ozbaki and Arisman (Alizadeh *et al.* 2013b: 155). Phase II2 comprises a mudbrick platform surmounted by thick-walled rooms with benches, again with evidence for craft activity in an external area. There is also a highly unusual square structure with internal niches and semi-circular protrusions (Figure 7.42). A typical Proto-Elamite steatite seal was found in one of the rooms of this phase. Radiocarbon dates from Phase II2 span 3300–3000 BC (Pollard *et al.* 2013). The sequence of rectilinear Proto-Elamite architecture at Qoli Darvish is succeeded after a significant hiatus by a complex of at least three circular structures in the style of Early Transcaucasian Culture architecture (ETC: Chapter 8) with ETC-related ceramics.

Period IV at **Tepe Sialk** overlies a burnt level resulting from a destruction of Sialk III (see Chapter 6; Ghirshman 1939: 58–59; Dittmann 1987: 52–59; Dahl *et al.* 2013: 357; Mutin 2013a: 27; Fazeli Nashli and Nokandeh 2019; Helwing 2019), which together suggested to the excavator, Roman Ghirshman, that Sialk had been invaded by incomers from Susa (Ghirshman 1939: 58; *contra* Damerow and Englund 1989: 62, fn 170). As we saw in Chapter 6, Sialk IV_1 comprises an important building on Sialk South associated with Late Uruk/Late Susa II-related materials such as ceramics, cylinder seals and numerical tablets, all interpreted as an Uruk or Susa control post on an important trade route (Algaze 1993: 55–56). Overlying these buildings, and separated from them by a sterile layer 70 cm thick, are the remains of Sialk IV_2, which comprise disturbed deposits with Proto-Elamite material culture including painted ceramics as well as bevelled-rim bowls and low-sided trays (Ghirshman 1939: 58–61; Amiet 1985; Dahl *et al.* 2013: 357), radiocarbon dated to *c.* 3200–3100 BC (Nokandeh 2010b; Fazeli Nashli *et al.* 2013b: 111). Thus Sialk, like Sofalin, maintains its importance in transregional connections across the Late Chalcolithic/Early Bronze Age transition.

Burials of infants in jars in Sialk IV_2 are comparable to examples from Malyan and Arisman, and there are intra-mural graves of adults richly furnished with alabaster vessels, copper mirrors and elaborate jewellery of lapis lazuli, shell, gold, silver and carnelian (Ghirshman 1954a: 48, Figure 17). Continuing the Late Chalcolithic tradition of early administration and numeracy at Sialk, there is evidence of Proto-Elamite bureaucracy in level IV_2, with up to five tablets with Proto-Elamite signs, dealing with herds of animals (Figure 7.43) (Ghirshman 1934, 1954a: Figure 18; Damerow and Englund 1989: 2; Dahl *et al.* 2013: 357; Desset 2016: 69; Dahl 2018: 383–384, 2019: 61; Bridey and Cuny 2019a: 52; Bridey and Cuny 2019b: Figure 11.4). Texts from Sialk IV_2 have poorly drawn signs and may date to the earliest Proto-Elamite writing phase (Dahl *et al.* 2013: 373). They also have perforated holes in them, a most unusual feature (Ghirshman 1939: 67) that continues the local Chalcolithic practice of piercing clay sealings, perhaps for archiving or label-attaching purposes.

What appears to happen at Sialk in the late fourth millennium BC, then, is the destruction by fire of a local culture at the end of Sialk III, the implantation of a Late Uruk/Late Susa II colony on the summit of Sialk South, analogous to Godin VI:1 (Chapter 6), and its succession by a Proto-Elamite presence in Sialk IV_2 followed by a significant period of abandonment. Algaze (1993: 55–56) has stressed the strategic location of Sialk, like Godin Tepe commanding a major route across the Iranian plateau, and therefore with the potential to control movement of cherished raw materials and commodities as part of a transregional network of interaction.

Figure 7.43 Tepe Sialk, Proto-Elamite tablet AO18173 (Bridey and Cuny 2019a: 52) (Ghirshman Archive, Department of Near Eastern Antiquities, Musée du Louvre. Inv. no DAO-600–004–0093)

Figure 7.44 Arisman, Area C layer of house I (photo credit: Barbara Helwing, DAI-EA; photo no: ARI_chapt2-1-3-2_fig36).

Proto-Elamite levels have been extensively explored at **Arisman**, just 60 km south of Sialk (Helwing 2006, 2013a, 2019). Major evidence for copper working develops at Arisman through the fourth millennium BC, contemporary with Sialk III and IV, including a transition from crucible smelting to furnace smelting in the Proto-Elamite levels (Helwing 2018: 124–125). Metallurgical activity in Area A at Arisman, dated to 3100–2900 BC, generated a heap of some 20 tons of slag from production of arsenical copper and speiss, an iron-arsenic alloy (Rehren *et al.* 2012). This step change in metal production is matched by a switch from largely hand-made to wheel-turned mass-produced ceramics (Helwing 2013a: 100), both probable indicators of increasing social and economic complexity. The settlement in Area C includes a well-planned domestic quarter (Figure 7.44) with ceramic and metal workshops, Proto-Elamite-style pottery comparable to Susa

Figure 7.45 Arisman, Area C painted pottery (photo credit: Hermann Parzinger, DAI-EA; photo no: 2-2-2 fig06).

Figure 7.46 Arisman, Area C cylinder seals with modern impression (photo credit: Barbara Helwing, DAI-EA; photo no: Teh50_fig172).

Acropole I 16-14 and to Malyan (Figure 7.45) (Helwing 2011a: 216) and three typical cylinder seals (Figure 7.46) (Helwing 2011c: 274–276). No tablets or clay sealings, and only a single token, have been found at Arisman. Radiocarbon dates for Area C, phases 7-4 (Proto-Elamite) lie around 3300–3100 BC (Helwing 2011a: 215, 2013a: 100). Jar burials, largely of infants, date to slightly later within the Proto-Elamite horizon (Chegini *et al.* 2011: 44). As with other Proto-Elamite assemblages, the chipped stone material is dominated by the standardised production of sickle blades (Helwing and Thomalsky 2011). Settlement patterns in the region of Arisman show a pattern of rural abandonment contemporary with the growth of the site of Arisman itself (Helwing 2013a: 100), the classic pattern for Proto-Elamite settlement.

Characterising the Proto-Elamite horizon

From the above review of evidence from key sites and regions, we can emphasise and attempt to interpret some characteristic features of the Proto-Elamite phenomenon (excellently surveyed by Mutin 2013a). Proto-Elamite settlement patterns are characterised by important regional centres with sparse evidence for surrounding village occupation. A serious decline in settled population across much of Iran, accompanied by a trend to agglomeration in regional centres, appears to characterise the later fourth and early third millennia BC more broadly (Young 1977; T. Potts 1994: 62–63, Table 2; Alden 2013: 229; Hopper and Wilkinson 2013: Figure 3.8). Thus, the Proto-Elamite centres of Susa, Senjar, Malyan, Sialk, Arisman, Sofalin and Yahya appear as widely spaced regional foci across the landscape, with sparse evidence for surrounding rural settlement. Other areas, such as northern Susiana (Johnson 1973; Dollfus 1985; Zalaghi 2019), the Ram Hormuz plain (Alizadeh *et al.* 2013a; Alizadeh 2014), the Izeh plain (Wright 1979, 1987; Alden 1982b: 619–620), and the Mamasani region (Potts and Roustaei 2006) may have hosted more dense and hierarchical settlement at this time, but a problem is the lack of intensive programmes of regional survey in many of the key regions, coupled with the issue of modern alluviation referred to above which has clearly buried many small and even substantial sites.

Still something of a mystery is the apparent absence of Proto-Elamite (and of Late Uruk/Late Susa II) traces in north-eastern Iran, for example at Tepe Hissar (Thornton *et al.* 2013: 141), a site where significant quantities of lapis lazuli were being processed through the later fourth millennium BC. It is possible that the people of Hissar participated in the Proto-Elamite world, as a centre for lapis lazuli processing and shipment, but without adopting any of the material traits of the Proto-Elamite horizon (Helwing 2006). To the west, settlement on the Deh Luran plain shows signs of significant growth, in step with Lower Mesopotamia to the west (Wright 1987). In fact, it is notable that Proto-Elamite ceramics are lacking from the Deh Luran plain, where Lower Mesopotamian-related assemblages of Early Dynastic I types take their place, clearly demonstrating the situation of Deh Luran within the Mesopotamian sphere of influence at this time.

While local evidence from Iran is slight (Stevens *et al.* 2006), there is some indication from palaeoclimate proxies from Southwest Asia, in particular from Soreq Cave (Bar-Matthews *et al.* 1997), of a short sharp decline in precipitation at about 3200 BC, which may have impacted on crop harvests particularly in marginal regions. The concentration of human and economic resources in Proto-Elamite centres, along with rural abandonment, might therefore be seen as responses to a relatively sudden onset of adverse climatic and agricultural conditions (Staubwasser and Weiss 2006).

How did Proto-Elamite regional centres function and can we consider them as urban centres? We can detect clear elements of central planning and transregional architectural consistency in features such as the formal layout of buildings in Area C at Arisman (Chegini *et al.* 2011: 63, Figure 10) and in level IVC2 at Yahya (Mutin 2013a: Figure 2.2), and in the use of standardised mudbricks and building plans at least at Arisman, Malyan, Yahya and Susa (Potts 2001: 10; Mutin 2013a: 11). These features suggest the existence of powerful organisations, households or even individuals who could structure settlement plans *de novo* according to their own designs. The scale of Proto-Elamite Malyan is impressive, with up to 50 ha of settled area in this period, and significant evidence for monumental architecture, a 5 km-long surrounding wall and specialised craft and administrative activity, as we have seen. But other Proto-Elamite sites, probably apart from Susa, appear to have been quite modest in size and on the criterion of scale alone cannot be considered truly urban, even if hosting material evidence for social and economic complexity. It seems more appropriate to characterise Proto-Elamite settlement developments as a process of "centralisation" rather than "urbanisation," in the sense employed by Çevik (2007) in her analysis of Early Bronze Age Anatolia, another highland region bordering the plains of Mesopotamia. In this light, centralisation of settlement means the emergence of regional centres, which need not be substantial in areal extent, dominating a simple two-tiered settlement hierarchy.

As with Lower Mesopotamia in the Late Uruk and Jemdet Nasr periods, we have little information on how Proto-Elamite communities disposed of their dead. Burial of children, rarely adults, in pits and ceramic pots, sometimes placed under floors of buildings, is attested in Proto-Elamite levels at Arisman (Chegini *et al.* 2011), Malyan in area TUV (Nicholas 1990: 50–51), Qoli Darvish (Alizadeh *et al.* 2013b: 155) and Sialk (Ghirshman 1939: 59–61). Adults may have been buried in discrete cemeteries not yet located or disposed of in ways that have not left recoverable traces.

Proto-Elamite diet and economy were based on agricultural production and animal herding, particularly of goat and sheep, with evidence for seasonal pastoral mobility in some regions such as Fars. Goat and sheep provided the bulk of meat while sheep were exploited also for milk and wool (Zeder 1991: 163). As we have seen, there is debate about the extent to which Proto-Elamite communities engaged in seasonal transhumance with their flocks of goat and sheep. Cattle may have been used as draft animals while donkeys were used as beasts of burden (Zeder 1986, 1991: 138) and pigs appear to have been avoided or eschewed as major components of diet (Mashkour 2006b), an attribute that matches the absence of pig representations in Proto-Elamite writing and sealing systems (Dahl 2018: 386), which together may indicate a dietary taboo on pigs and pig products. Hunting of wild animals does not appear to have played a major role in Proto-Elamite economy (Zeder 1991: 138). Barley and wheats were the mainstay crops of the Proto-Elamite world (Meadow 1986: 30).

A characteristic marker of the Proto-Elamite horizon is the presence of material remains of bureaucracy in the form of seals, seal impressions and inscribed tablets, as we have seen above. As Dahl *et al.* (2013: 353, Figure 18.1; Desset 2016; Alizadeh 2017: 65; Dahl 2019: 61) have summarised, Proto-Elamite tablets have been found so far at eight widely dispersed sites: Susa (*c.* 1560), Tall-e Geser (1), Malyan (33), Sialk (*c.* 7), Ozbaki (1), Sofalin (>16), Yahya (27) and Shahr-i Sokhta (1) (Figure 7.2). There are unconfirmed reports of Proto-Elamite tablets from Qoli Darvish near Qom (Fazeli Nashli *et al.* 2013b: 110). But the distribution of Proto-Elamite tablets across these sites is highly uneven, with Susa yielding by far the largest proportion (*c.* 1,560 out of more than 1,600 total tablets: Dahl *et al.* 2013: 354). We have discussed above the possibility that the Proto-Elamite script is connected to the spoken language of the administrative elite, which is not to claim that the script renders the language in all its grammatical fulness. As we have seen, the relationship of Proto-Elamite to later Elamite remains unclear, but one scenario is that "the geographical range of Proto-Elamite tablets marks the early establishment of an Elamite cultural area including at least the valleys of Fars, the lowlands of Khuzistan, and outposts or enclaves to the north and east of these regions" (Stolper 1984: 9), supported by Englund's (2004: 140–141) view that "Given later linguistic evidence, it is likely that an indigenous, Elamite-speaking population was living there [in Iran] in the latter half of the fourth millennium."

The tablets reveal an overriding concern with administration of the rural economy, based on agriculture and animal herding, as well as with the organisation of labour (Desset 2016; Dahl 2018; Dahl *et al.* 2018) and the movement of commodities and items such as dairy products and stone and metal tools amongst individuals, households and institutions. While the Susa texts, discussed above, show management of very large numbers of people, animals and commodities, texts from other sites such as Malyan and Yahya relate to more modest scales of interaction. Alongside the inscribed tablets, distinctive types of cylinder seal were used to seal tablets, storeroom doors and a range of containers (Pittman 2001b). The iconography of Proto-Elamite seals, in particular the glazed steatite style that is found way beyond the borders of the Proto-Elamite world, in the Hamrin and Diyala regions, in Lower Mesopotamia, and at Ninevite 5 sites in Upper Mesopotamia (Figure 7.1) (Pittman 1994), suggests major transregional connections within and beyond the Proto-Elamite world. Notable aspects of glyptic iconography include an aversion to human (and porcine) depiction, the portrayal of animals in human poses and the inclusion of some signs comparable to those attested on inscribed tablets, such as the hairy triangle and chunky cross.

The detailed analysis by Dahl (Dahl *et al.* 2013; Dahl 2018) of all known Proto-Elamite texts has begun to establish a relative chronology for the evolution of these distinctive bureaucratic aids, while Englund (2004: 140) points to the evidence for rapid development of a full writing system in Proto-Elamite once a decision had been made (by a single individual at Susa?) to adopt this mode of written communication. It is striking that tablets assigned to the early and middle phases of the Proto-Elamite horizon are found at Susa and Tall-e Geser in Khuzestan and otherwise only in central and northern Iran, at Sialk, Ozbaki and Sofalin, thus linking Susiana with routes leading along the western and northern edge of the central plateau. Later Proto-Elamite texts are found at Susa, Malyan, Yahya and Shahr-i Sokhta, as well as Sofalin, showing the development of administrative connections of Susiana with southern and eastern Iran, as well as the continued significance of the great high road to the north. In all phases, the site of Susa is the axis upon which the Proto-Elamite horizon turns, the place where key components of the Proto-Elamite world are first devised, including the distinctive script and the glazed steatite style of cylinder seal.

Ceramic assemblages from Proto-Elamite sites show many elements of consistency in their manufacture, form and decoration, possibly realised through cadres of itinerant specialist potters (Alden and Minc 2016), as well as points of comparison, at least in terms of assemblage structure, with contemporary Jemdet Nasr assemblages from Lower Mesopotamia to the west (Helwing 2011a; Petrie 2014) and ceramic traditions to the east (Mutin *et al.* 2016). But there are local components in all Proto-Elamite assemblages, and there is evidence for local manufacture of ceramics within a transregional *koine* of shared ceramic concepts and practices (Mutin 2013a: 13, 17; Mutin *et al.* 2016). It is fair to say that insufficient attention has hitherto been devoted to analysis and interpretation of the local components of material culture assemblages within which Proto-Elamite materials are situated (Petrie 2013b: 15).

Production, distribution and consumption of metals, above all copper but also silver, gold and lead, are well attested across the Proto-Elamite horizon, with the site of Arisman playing a major role in extraction and smelting of copper for distribution across much of Iran and beyond (Vatandoust *et al.* 2011; Helwing 2011b, 2018). Christopher Thornton (2009: 315–316) has pointed out that contemporary with Proto-Elamite Arisman, we can trace a major step change in metal production at a range of sites in highland Iran, including the "Industrial Quarter" at Sialk and the "South Hill" at Hissar, which we can characterise as specialised production, probably under the control of "central "elite" authorities."

The manufacture of high-quality artefacts from compounds of materials, including stone, metal and shell, appears to be a distinctive Proto-Elamite feature (Helwing 2006: 42). Immense skill and aesthetic refinement are evident in the production of the few high-status Proto-Elamite artefacts known to us, mainly without archaeological provenance. Such items include a silver kneeling bull holding a spouted vessel (Hansen 1970; Pittman 2003a: 43), an extraordinary standing lioness of magnesite or crystalline limestone in a twisted, fist-clenched pose, matching scenes on several Proto-Elamite cylinder seals (Porada 1950; Amiet 1966: 104–105; Pittman 2003a: 44–45), and a silver ithyphallic bull pendant (Aruz 2002). All these objects are likely to have been possessed and displayed by high-status individuals or households within Proto-Elamite societies.

Furthermore, the movement over considerable distances, sometimes from outside the Proto-Elamite world, of cherished commodities such as lapis lazuli, turquoise, carnelian, obsidian and seashells suggests well-connected communities with tastes for the exotic, but we should bear in mind that such exotica are not found in large numbers at Proto-Elamite sites (Mutin 2013a: 14), nor do they feature as far as we can tell in the content of Proto-Elamite texts (Lamberg-Karlovsky 2013: 565). Connections across the Proto-Elamite world are demonstrated through multiple common aspects of material culture, and also by the occurrence of shared practices in Proto-Elamite texts, including usage of specific signs such as the fringed triangle variant containing a four-pointed star, found on texts from Susa, Tal-i Malyan, Tepe Sofalin and Tepe Yahya (Dahl 2013: 249). Abdi (2012: 26) has pointed out that many sites with Proto-Elamite material culture may be interpreted as "gateway communities for contact between Proto-Elamites and other cultural regions." Thus, Susa could have served as a gateway between Iran and Mesopotamia, Shahr-i Sokhta as a gateway between eastern Iran and Afghanistan and the Indus Valley, and Tepe Hissar as a gateway between the central plateau and Turkmenistan and Central Asia.

The Hamrin region of eastern central Iraq is of particular interest during the Proto-Elamite period, bordering as it does the Zagros foothills and mountains of Luristan to its east and the central Mesopotamian plains to its west. As we have seen, the glazed steatite or piedmont glyptic style is richly attested in early third millennium BC sites of the Hamrin and Diyala valleys, but what also marks this region is the appearance of large-scale circular architecture at several major sites of the region, including Tell Gubbah, Tell Razuk and Tell Madhhur. Renette's (2009) re-examination of the Hamrin circular structures demonstrates their main function for storage of agricultural surpluses, above all grain, almost certainly by mobile groups of herders. The use of seals and sealings at all these sites, as also at contemporary Chogha Maran on the Mahi Dasht (Pittman 2014; Renette 2018: 311–312; Renette et al. 2021), fits with such a pattern. While lacking evidence for proto-writing, the societies of the Hamrin region in the early third millennium BC provide an interesting model for considering how small-scale mobile communities of the region managed and maximised their resources through collective means. Certainly, the location of Proto-Elamite sites, and the material evidence itself, suggests a strong Proto-Elamite concern with access to cherished commodities and materials, many of which were imported from outside into Iran.

In sum, the shared attributes of the Proto-Elamite horizon in multiple aspects of material culture argue for a strong degree of social cohesion across large distances, mediated through structures of political and administrative control, neatly captioned as "communities of interest" by Massimo Vidale (2018a), including the use of writing and seals, and perhaps also sustained through seasonal movements of significant proportions of village populations with their animals. This apparent cohesion may have been based on notions of tribal affiliation, an ideology that may have successfully integrated sedentary and more mobile components into a coherent state-like political entity, capable of self-sustaining for just a few centuries. But as yet it is unclear whether we should view the Proto-Elamite horizon as comprising politically autonomous spheres of regional power, broadly distributed across Khuzestan (Susa, Geser), Fars (Malyan), Qom-Isfahan (Qoli Darvish, Sialk, Arisman), Tehran (Sofalin) and Kerman (Yahya), sharing means and modes of socio-economic interaction, or as a centralised political entity controlled by an over-riding elite based in one of these regional centres, be it Susa or Malyan or elsewhere. As to the means by which Proto-Elamite social identity was sustained across such large spans of Iran, Mutin *et al.*'s (2016: 860) richly contextualised analysis of ceramics from Tepe Yahya IVC concludes that

> This tends to indicate population replacement – by a community and not only a portion of it – rather than assimilation or emulation of all these Proto-Elamite aspects by locals….the newcomers, possible migrants from the west, re-created their material culture using local resources.

The universal avoidance across the Proto-Elamite world of the depiction of the human form in the media of writing and glyptic, plus the striking absence of evidence for consumption of, and depiction of, pigs and pig products, strongly suggests the top-down imposition of a distinctive ideology, doubtless religiously mediated, as a mechanism for creating and sustaining social identity at a transregional scale. There are of course numerous historical parallels for such a process.

How then can we characterise the Proto-Elamite horizon as a socio-cultural phenomenon? Algaze (1993: 107) usefully designates it as a "successor state," which assumed control of networks of political and economic engagement that were already in existence by the later fourth millennium BC (Tosi 1976; Mutin 2013a: 18, 200). The routes of communication were already established and indeed well-trodden, strategic points of control along those routes had already been settled, the apparatus of administrative control of rural production, storage and distribution had already been devised and applied, and the mechanisms of management and exploitation were already in place. The strategically located sites of Sialk and Sofalin both demonstrate the concern of Proto-Elamite administrators to maintain Late Uruk/Late Susa II control over rural economies at these key nodal points in the landscape. By contrast, the fact that Godin apparently fails to make the transition to a full Proto-Elamite site, despite hesitant evidence of a Proto-Elamite presence there (cylinder seals), may have to do with the success of the people represented by the Early Transcaucasian pottery that dominates at the site following the abandonment of the Oval Enclosure of Godin VI:1 (Chapter 8). Basing her arguments on Tainter's (1988) study of collapse, Barbara Helwing (2013a: 98, 2019) proposes that the Proto-Elamite phenomenon should be viewed as a local articulation of complexity in the immediate aftermath of the collapse of the Uruk/Susa II dynamic, an argument that chimes well with Algaze's idea of a successor state, as well as with Mutin's (2012: 180) comment that the Proto-Elamite phenomenon in south-eastern Iran "was constructed, at least partially, in relation to dynamics rooted in the previous periods from other locally and regionally separate polities and corresponding political structures." The Proto-Elamite state was the state of Late Uruk/Late Susa II with a new face, speaking a new language and writing a new script, but its inner workings and its *raison d'être* remained the same, which is why certain structural and institutional (Benati 2018) components of the Late Uruk/Late Susa II world – written records, use of cylinder seals, architectural planning, taxation and rationing, consumption of certain foodstuffs – were sustained into the new era.

The end of the Proto-Elamite world

We can date the collapse of the Proto-Elamite system at Susa to *c*. 2900–2800 BC when Early Dynastic Mesopotamian styles of pottery and glyptic become dominant in much of western Iran (Voigt and Dyson 1992: 133; Potts 1999: 90; Wright and Rupley 2001). Proto-Elamite collapse at Tal-i Malyan and Tepe Yahya appears to happen a little later but certainly before 2700 BC (Mutin 2013a: 42). At Susa, collapse can be attributed to a resurgence of Mesopotamian influence, in the form of newly coalescing Sumerian city-states, and possibly to outright invasion, but direct Sumerian action is unlikely to be the cause of collapse further east (Potts 1999: 90). Amiet (1992: 5) attributes collapse to the instability inherent in the "intrinsic duality of Proto-Elamite civilization....compounded by the excessively rapid urbanization of the mountain heartland." A similar view is inherent in Lamberg-Karlovsky's (1978: 118) statement that the Proto-Elamite polity had "overextended its own lines of communication and control."

Dahl (2013: 257) points out that the collapse of the Proto-Elamite writing system would have been hastened in view of the fact that there is virtually no evidence for a scholarly tradition at Susa to support the cultivation of the Proto-Elamite written system. The scribes at Susa in the Susa III period borrowed much from Lower Mesopotamia, as we have seen, but one attribute that failed to travel from the Late Uruk/Jemdet Nasr world to Proto-Elamite Susa was the scholarly practice of employing exhaustive lexical lists as training aids. Once the Proto-Elamite writing system started to collapse, and Dahl *et al.* (2013: 375) estimate that there were only "a very small number of practitioners," there was no apparatus with which to sustain it or to bring it back at a later date. Thus, the impact of Proto-Elamite on later writing traditions in Iran is virtually nil. After *c*. 2800 BC, writing disappeared from western Iran for more than half a millennium and when it did reappear it was as an imposition from outside in the form of Mesopotamian cuneiform script at *c*. 2300 BC (Dahl 2009: 26, 2013: 234). For central and eastern Iran, the interlude between episodes of writing was far greater.

But not only writing disappeared from the central plains of Iran. People also seem to vanish into thin air. For at least the period *c*. 2900 to *c*. 2300 BC we lack evidence for settlement on the plains of Qazvin, Tehran, Kashan (Fazeli Nashli *et al.* 2013a: 126) and Qom, with the significant exception of Qoli Darvish where Early Trans-Caucasian occupation starts at *c*. 2700 BC (Chapter 8), and across the entire Arisman region (Helwing 2011b: 531, 2018: 126). The plains of Susiana and Ram Hormuz in Khuzestan see a major fall in settlement

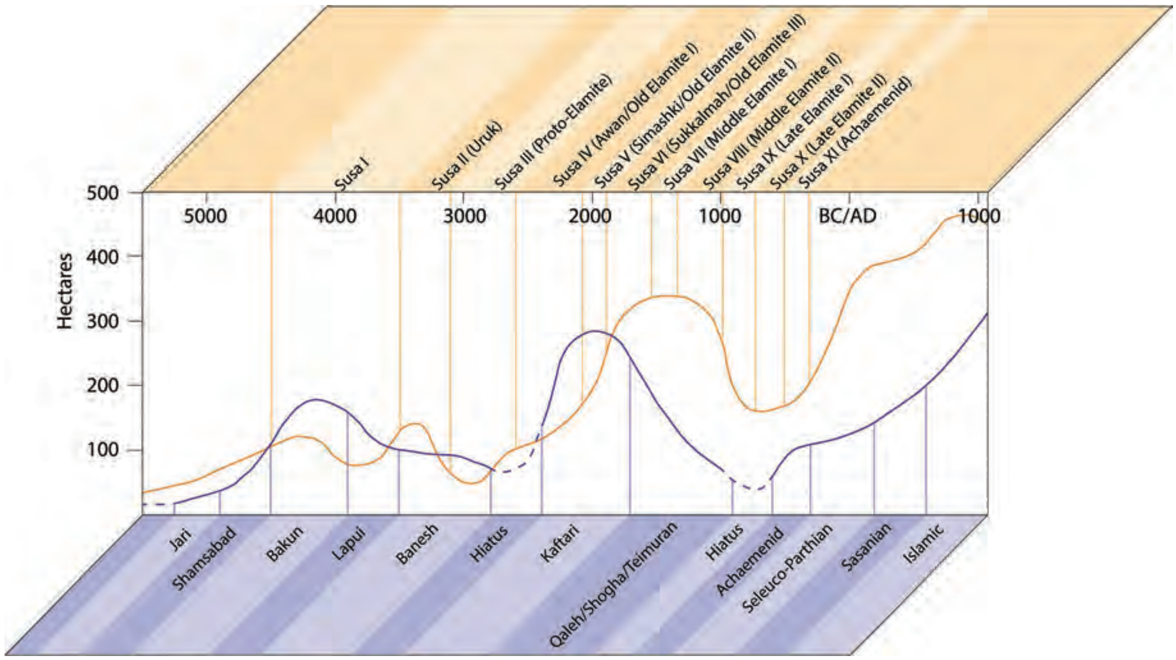

Figure 7.47 Settlement trajectories through time for the Kur river basin (lower) and Susiana (upper), showing occupied areas, in hectares, per period (adapted from de Miroschedji 2003: Figures 3.2–3.3).

enduring throughout the early-mid third millennium BC (Figure 7.47) (de Miroschedji 2003: 19; Alizadeh 2014: 3), while the Kur river basin, the most fertile region in Fars, lacks evidence for permanent settlement between 2800 and 2400 BC (and again between 1000 and 550 BC: de Miroschedji 2003: 19). Along the Zagros chain from Godin Tepe to Fars and across the Zagros into the Hamrin valley of eastern central Iraq, all these regions appear devoid of permanent settlement for several centuries of the early-mid third millennium BC (Renette 2009: 80; Thornton 2012: 596). These figures are extraordinary indications of a major rupture in long-term village life that requires explanation, doubtless partly through climatic and environmental factors given the evidence for an episode of a cold and dry climate spanning *c.* 3200–2700 BC (Schmidt *et al.* 2011; Islam *et al.* 2016), as well as through possible transitions from settled to more mobile lifestyles. It is also likely that some areas of Iran became too unstable and unsafe for year-round human settlement, during the lengthy episodes of military conflict between Mesopotamia and the Elamite state that characterise much of the third millennium BC (Chapter 10).

In eastern Iran, the end of the Proto-Elamite horizon is marked by sudden, complete and lengthy abandonment of key sites such as Tepe Yahya (Lamberg-Karlovsky 1989: ix; Mutin 2013a: 42, 189–190), and the collapse of the apparatus of regional and agricultural control as manifest in the Proto-Elamite system of writing and sealing. This part of Iran stayed out of the written word for a very long time thereafter. The connected world of the Proto-Elamite horizon is replaced across eastern Iran by regional centres such as Shahr-i Sokhta, Shahdad and Tepe Hissar with increasing evidence for contacts into Central Asia and Baluchistan (Chapter 9; Lamberg-Karlovsky 1989: ix; Amiet 1993: 26–27). In his thoughtful reviews of the Proto-Elamite material from his own excavations at Yahya, Lamberg-Karlovsky (1978, 1989) interprets the Proto-Elamite phenomenon in the same terms as the preceding Uruk phenomenon, as the colonisation of areas previously peripheral to core areas where increasing socio-economic complexity and population pressure led to a need for societies to expand into new territories. Collapse is inevitable in such a scenario, as the potential for expansion is highly restricted, in particular across the deserts and high plateaux of upland Iran. Networks of communication and control over tough terrain and daunting distances get stretched beyond sustaining point. A related point, made by Hans Nissen (2001: 176), is that the geographical span of the Proto-Elamite horizon, unlike the preceding Late Uruk/Late Susa II world, covered highly diverse environmental zones, from the lowlands and marshes of Khuzestan to the high Zagros plains, from the desert-edge routes of the Great Khorasan Road to the hot valleys of Kerman and Sistan. Control over such geographical diversity in the pre-modern era could only ever be fragile and fleeting.

In an ambitious review covering the period 3500 to 700 BC, Pierre de Miroschedji (2003) articulates a long-term systemic view of "cyclic variations" in the transitions through time between what he calls the Irano-Mesopotamian System (defined as the Lower Mesopotamian plains plus the Iranian highlands) and the Elamite System (defined as the Iranian highland zones plus Khuzestan). Each of de Miroschedji's cycles comprises distinct sequential phases: (1) trade-driven expansion of Mesopotamian polities onto the Zagros highlands and down the Persian Gulf; (2) secondary state formation in the highland zone, stimulated by lowland engagement; (3) desire of secondary states to control trade and eventually to conquer lowland partners, leading to; (4) collapse of entire lowland-highland network, political fragmentation, rural abandonment, and resurgence of pastoral nomadism in the highland zone (de Miroschedji 2003: 23–25). The Proto-Elamite collapse can be seen as the first instance of this phenomenon, with the Proto-Elamite "state" directly resultant from Uruk/Late Susa II highland engagement in the late fourth millennium BC, and its collapse indeed leading directly to rural abandonment on a massive scale, as we have seen.

Partly chiming with this interpretation, Pierre Amiet's view of Proto-Elamite collapse, "as from a single blow," cites "an urbanisation that was excessive for the agricultural and demographic capacities of its cradle, present Fars, where the city of Anshan was abandoned" (Amiet 1993: 26). Furthermore, in a rare bottom-up perspective, Lamberg-Karlovsky (2001a, 2003, 2013) has discussed the possibility that the societies of Iran and neighbouring regions deliberately chose to reject state-like complexity and its potentially oppressive apparatus of control and manipulation, physically manifest in the Proto-Elamite tablets and seals, preferring instead to pursue less intensive, and more traditionally rooted, modes of living in harmony with their natural and constructed environments. Such a scenario is theorised by Yoffee (2005: 139) in his discussion of collapse of Mesopotamian states: "Collapse, in general, tends to ensue when the center is no longer able to secure resources from the periphery, usually having lost the legitimacy through which it could disembed goods and services of traditionally organized groups." For reasons we can never know but can freely imagine, the centralising authorities of the Proto-Elamite world, whether at Susa or Malyan or both, lost their legitimacy in exerting control over widely-dispersed regional bases of power across almost all of Iran, a control that was after all exercised by small cadres of protoliterate administrators, sometimes living as strangers in a strange land within fortified enclosures atop settlements with substantial local populations, many of whom may have been only too happy to see an end to bean-counting and bureaucratic interference in their daily lives. For now, the state experiment in Iran was over.

8 People on the move: prehistoric networks of Bronze Age Iran, 3400–1100 BC

Iran beyond the Proto-Elamite horizon

In the previous chapter, we saw that much of Iran was involved at least to some degree in the Proto-Elamite state experiment for a period of a few centuries centring on *c.* 3000 BC. But not all of Iran was so engaged. Large swathes of the country appear to have remained firmly outside the control of the pen-pushers ("stylus-scratchers"?) and agricultural managers who ran the Proto-Elamite state, if state indeed it was. In this chapter, we study the regions of Iran beyond the Proto-Elamite horizon, tracing cultural, economic, social and political developments in north-western, western and southern Iran, regions that remained preliterate throughout the Early Bronze Age (Helwing 2017b), before turning in the following chapter to consideration of south-eastern and north-eastern Iran through the third millennium BC in the aftermath of the Proto-Elamite collapse.

We begin our study with one of the most extraordinary large-scale cultural phenomena of ancient Iran, the Early Transcaucasian Culture of the Early Bronze Age and its impact upon north-western and western Iran, before considering this distinctive region in the Middle-Late Bronze Age, up to the onset of the Iron Age from *c.* 1250 BC. Our focus then shifts southwards to examine the spectacular evidence for Bronze Age funerary practices in the Luristan region of western Iran, before finally covering Bronze Age developments in the core Fars region of southern Iran. As explored in the Chalcolithic chapter, communities in each region of Iran pursued their own courses of socio-economic behaviour through time whilst sustaining to varying degrees regional and transregional engagements that keyed them into wider worlds, as attested through attributes of their material culture, including architecture, ceramics and metalwork. These cultural threads can equally be discerned and followed through the Bronze Age, as we now consider in detail.

The Early Transcaucasian Culture (ETC) in Iran, 3400–2600 BC: an ideology of home and the hearth

Partly overlapping with the period when the Proto-Elamite horizon is attested across much of Iran, there is clear evidence of an even more expansive socio-cultural phenomenon known by most archaeologists as the Early Transcaucasian Culture, or ETC for short, originally an abbreviation of "Early Trans-Caucasian" coined by Charles Burney (Burney and Lang 1971: 44), alternatively called by some the Kura-Araxes Culture or Horizon after the Kura and Araxes rivers, which flow through Georgia, Armenia and Azerbaijan to the north of Iran (Kohl 2007: 86–102, 2009; Smith 2012: 675–679; Batiuk 2013), or within Iran the Yanik Sphere (K. Alizadeh 2010; Abdi 2012: 26; Summers 2013a, 2013b, 2014). The Early Transcaucasian Culture is a purely prehistoric entity, lacking any trace of writing or proto-writing, and our approach to it must therefore be firmly grounded in all aspects of its material manifestations (the special issues of *Paléorient* 40/2 2014 and 41/3 2015 dedicated to "The Kura-Araxes culture from the Caucasus to Iran, Anatolia and the Levant: between unity and diversity" are especially informative and stimulating on ETC). As far as Iran is concerned, ETC evidence is concentrated across the mainly highland regions of north-western and central-western Iran, with a southern limit in the region of Arak to the east of the central Zagros region and an eastern limit in the region of Mazandaran to the north of the Alborz range (Figure 8.1) (Summers 2013b).

North-western Iran is only one region within the ETC expanse (see Figure 7.1), which at its greatest extent reached from the Transcaucasian regions of Azerbaijan, Georgia (except Colchis, western Georgia), Nakhchivan and Armenia in the north (Lyonnet 2007b; Smith 2012, 2015; Batiuk 2013; Marro *et al.* 2014; Rova and Tonussi 2017) to central-western Iran in the south, and from central-northern Iran in the east across the Upper Euphrates highlands of eastern Anatolia (Marro 2011) and into the southern Levant, where its distinctive pottery is called Khirbet Kerak Ware (Amiran 1965; de Miroschedji 2000; Philip 2000; Philip and Millard 2000). It is important

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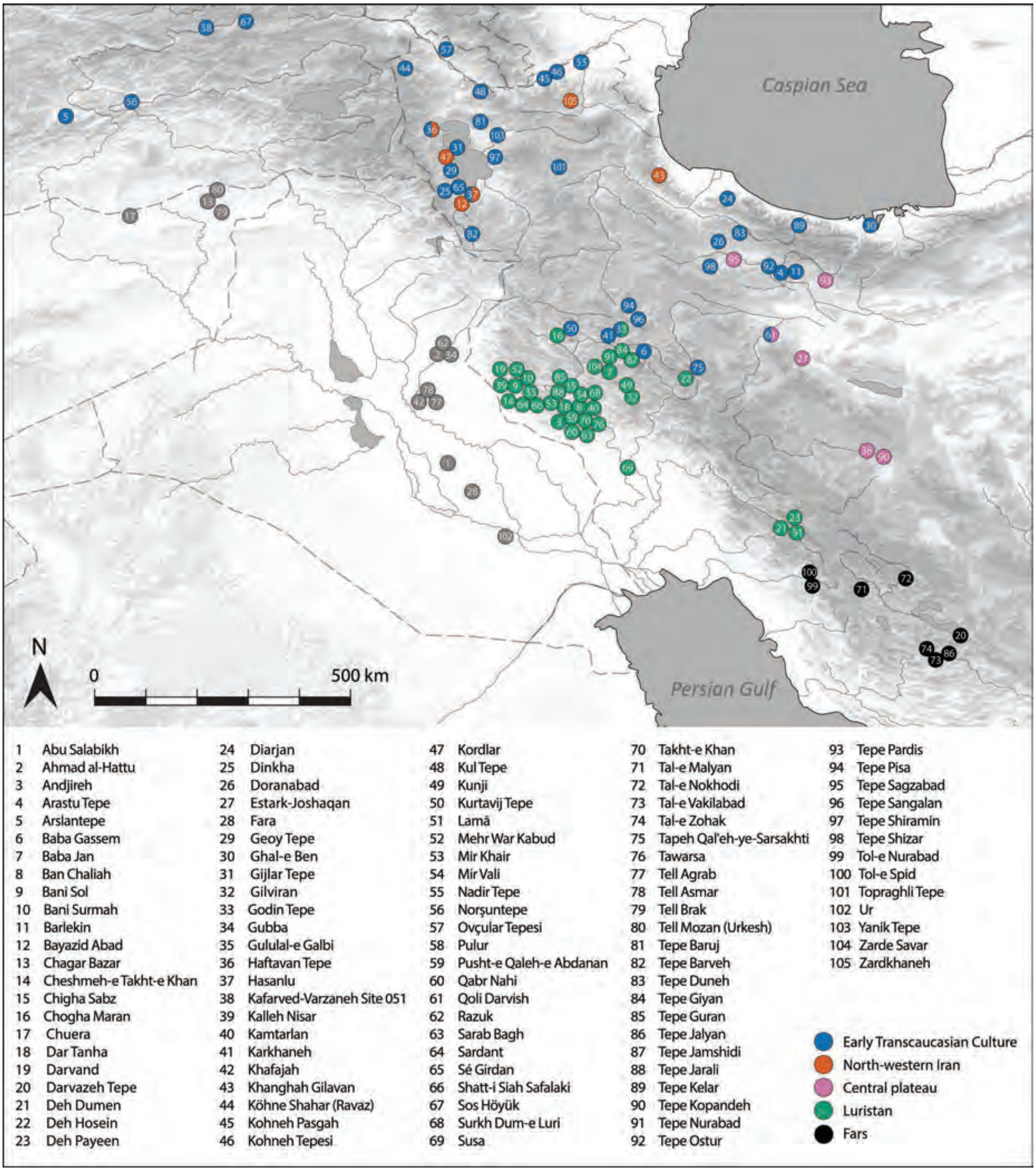

Figure 8.1 Distribution of ETC and Bronze Age sites in north-western Iran and adjacent regions.

to stress that within this vast and diverse geographic span the degree of cultural homogeneity was highly variable, and that not all regions within it show evidence for an ETC presence. In this study we will approach the ETC as a phenomenon both of north-western Iran and of ancient Southwest Asia more broadly (Kohl 2007; Batiuk 2013; Palumbi and Chataigner 2014).

Distinctive material culture attributes of the ETC include mudbrick and wattle and daub architecture in circular and rectilinear forms and handmade pottery, in red or black tones often highly burnished and decorated with incised and applied geometric and naturalistic motifs (Henrickson 2011a). Both of these material attributes – round and rectilinear houses and highly decorated ceramics – seem to hark back to a much earlier age such as the prehistoric Halaf culture of Upper Mesopotamia which, like ETC, also occurs across an enormous span of steppe, foothills and uplands of Southwest Asia (Matthews 2000: 85–111) but precedes the ETC by some two millennia.

Additional classic ETC cultural traits include zoomorphic baked clay hearths, lithic assemblages characterised by chert sickle blades and obsidian scrapers and points, metal ornaments such as double-spiral headed pins and animal figurines (Courcier 2007; Smith 2012: 676; Abedi *et al.* 2018a). In approaching the ETC here we begin by reviewing previous research into the topic before summarising the evidence from key sites and regions of north-western Iran. We conclude by attempting to apprehend the socio-cultural significance of the ETC sphere.

History of ETC research in north-western Iran

Erich Schmidt's pioneering use of aerial photography in Iran included the region of Lake Urmia, leading to the identification of substantial mounds (Schmidt 1940) one of which, Geoy Tepe near Urmia town, was selected for excavation by Theodore Burton-Brown in 1948 (Burton-Brown 1951). Burton-Brown's work at Geoy Tepe recovered the first sequence in the region for the Chalcolithic to Middle Bronze Age. Subsequently, Charles Burney's regional survey (Burney 1958) and excavations in 1960–1962 at Yanik Tepe, east of Lake Urmia, yielded one of the richest sequences of ETC occupation from north-western Iran (Voigt and Dyson 1992: 175–176). The Yanik Tepe sequence covers the ETC II-III phases. Burney's later work at Haftavan Tepe, at the north-western corner of Lake Urmia, further augmented the picture of ETC occupation in the Urmia basin. Other limited investigations of ETC levels in Iran include Italian excavations at Gijlar Tepe (Pecorella and Salvini 1984) and a deep sounding at Hasanlu south of Lake Urmia. Iranian rescue and research excavations at Kohneh Pasgah and other sites on the banks of the Araxes river have started to outline the local development of ETC from preceding cultural traditions of the region. Very few ETC sites within Iran have been extensively excavated, let alone fully published.

Information about ETC settlement patterns from archaeological surveys is of mixed quality, partly due to the difficulties of working in the terrain of north-western Iran. Amongst surveys of this region, those by Burney (1958), Ingraham and Summers (1979), Swiny (1975), Kleiss and Kroll (1979), Kroll (1984), Pecorella and Salvini (1984), Tala'i (1984), Young (2004) and Biscione (2009) have all contributed to our knowledge of ETC presence in the region. More recent surveys in north-western Iran have also provided new evidence (Omrani *et al.* 2012; Piller 2012a, 2012b; Maziar 2015, 2019).

Chronology of ETC

The chronology of the Early Transcaucasian Culture, in Iran and beyond (Di Nocera 2000; Marro 2000), has three distinct phases (Table 8.1) (Rothman 2003a: 211; Batiuk and Rothman 2007: 9; Summers 2013b: 167–168, 2014; Palumbi and Chataigner 2014: Figure 1). Discernible in the Kura-Araxes valleys, in Nakhchivan and regions of Armenia, ETC I covers the mid-later fourth millennium BC (Bahşaliyev 1997; Kiguradze and Sagona 2003; Sagona 2010, 2014; Marro 2011; Smith 2012; Rova 2014), thus contemporary at least in part with the Late Chalcolithic of other regions of Iran and overlapping in time with the earliest phase of the Proto-Elamite horizon. ETC I is restricted to the southern Caucasus and regions in the far north of Iran, such as the sites of Kohneh Pasgah (Maziar 2010, 2015) and Kul Tepe near Jolfa (Abedi 2016a; Abedi *et al.* 2018a). ETC II is attested at many sites in Iran, although only a few of them have been excavated, and only Yanik Tepe has extensive exposures. ETC II is marked by distinctive circular architecture, often with rectilinear pens or enclosures. ETC IIA is defined by a heavy representation of decorated handmade ceramics, using incision and excision often filled with white paste, while in ETC IIB the pottery is largely plain. In ETC III at Yanik Tepe, buildings switch from circular to rectilinear although the internal fittings stay the same. It is not clear to what extent the excavated Yanik sequence is representative of the region more broadly, but limited evidence from Haftavan, Geoy and Hasanlu does not contradict the scheme outlined here.

In absolute terms, ETC I starts possibly as early as *c.* 3600 BC in the Caucasus and Transcaucasus (Di Nocera 2000: 78; Marro 2000: 477; Badalyan 2014; Lyonnet 2014; Sagona 2014). The sites of Kohneh Pasgah and Kul Tepe in the southern Araxes valley are the key Iranian sites with ETC I occupation (Maziar 2010, 2019; Abedi *et al.* 2018a). ETC II covers much of the first half of the third millennium BC, as tentatively supported by radiocarbon dates from Kohneh Pasgah, Geoy Tepe, Hasanlu VII and Godin IV (Maziar 2010: 174; Rothman 2011: 166; Summers 2013b: 170). In eastern Anatolia, ETC III appears to stretch from *c.* 2500 BC well into the second millennium BC, as indicated by multiple dates from Sos Höyük (Sagona 2000, 2004, 2011). But within Iran a series of dates from Haftavan VI, the period succeeding ETC at Haftavan, suggests an end to ETC III before 2000 BC. At its southernmost extent, at Godin Tepe and sites on the Kangavar plain, the ETC comes to an end much earlier, as early as 2700 BC (Potts 2013b: 207), earlier than the end of ETC in its homeland of the Transcaucasus (Edens 1995: 53). ETC in Iran thus lasts for anywhere between 500 and 800 years, varying according to site and region. Beyond Iran, the ETC presence endures for up to 1,500 years, ending as late as *c.* 1500 BC at Sos Höyük in eastern Anatolia (Sagona 2000: 338).

Table 8.1 Chronology of ETC at major sites in north-western Iran (adapted from Davoudi *et al.* 2018: Table 1)

Cultural period	*Dates cal BC*	*Hasanlu*	*Kul Tepe*	*Haftavan*	*Oçular Tepesi*	*Kohneh Pasgah*	*Kohneh Tepesi*
Middle Bronze I	2100–1900	VIc	III	VIc	–	–	–
Early Bronze III	2200–2100	VIIa	IV	VII	–	IV–V	–
Kura Araxes III (Early Bronze II)	2500–2200	VIIb	IV	VIII	–	III	X
Kura Araxes II (Early Bronze I)	3000–2500	VIIc	IV	–	EBKA	II	X
Kura Araxes I	3350–3000	–	V	–	EBKA	I	–
Late Chalcolithic	4500–3750	VIII	VII–VI	–	LCI–LCII LCKA	I (KAI)	–

ETC regions and sites of Iran

North-western Iran at the crossroads of culture

North-western Iran is a highly distinctive region, dominated by highlands and the major basin of Lake Urmia, today almost dry and certainly saline since the Neolithic period (Danti 2013a: 2–5; Summers 2013b: 161). The region's geopolitical significance is well summarised by Danti (2013b: 327) as "a crossroads between Mesopotamia, the southern Caucasus, eastern Anatolia, and the Iranian plateau." The two high mountains of Kuh-e Sahand (3,700 m) and Kuh-e Sabalan (4,800 m) and their streams ensure ample water to the region, while to the east lie the humid uplands bordering the Caspian Sea. To the west the northern limits of the Zagros mountains merge into the eastern Taurus range in the region of Lake Van and the uplands of eastern Anatolia. To the north the region is bordered by the valley of the great Araxes river and its many tributaries. Hot summers and long cold winters, punctuated by short transitional seasons, are characteristic of this land. We discuss the ETC sites of this region by starting in the north-western corner of Iran before moving our attention eastwards and then south to the Lake Urmia basin (Figure 8.2) (see useful map of Iranian ETC sites in Maziar 2015: Figure 1).

The site of **Köhne Shahar** (also known as Ravaz), in the area of Maku in the far northwest of Iran close to the border with Turkey, has spectacular traces of an extensive ETC settlement comprising a fortified citadel with

Figure 8.2 North-western Iran and the Caucasus: major features and ETC sites (K. Alizadeh *et al.* 2015: Figure 2) (image courtesy of Karim Alizadeh).

round houses and a lower town with enclosures, streets and a communal open area, all visible as surface traces over an area of >10 ha, some of which have been excavated (Figure 8.3–8.6) (Kleiss and Kroll 1979; Kroll 2005a; Summers 2013b). Excavations at Köhne Shahar recovered ceramics of ETC II–III phases (Figure 8.7) comparable to those of the south Caucasus and east Anatolia rather than to materials from Yanik Tepe and Godin Tepe, plus

Figure 8.3 Köhne Shahar from the south (K. Alizadeh *et al.* 2015: Figure 3) (image courtesy of Karim Alizadeh).

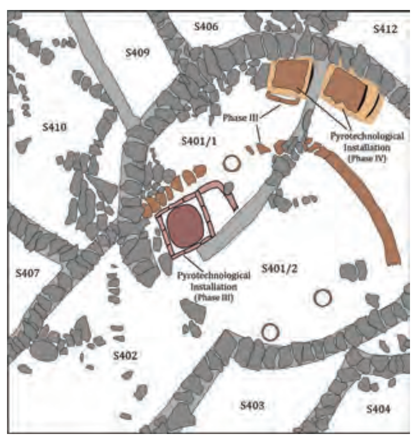

Figure 8.4 Köhne Shahar, excavated structures of the eastern neighbourhood, Trench 12J21, phase III in brown, phases IV–V in grey (Samei and Alizadeh 2020: Figure 4a) (image courtesy of Karim Alizadeh).

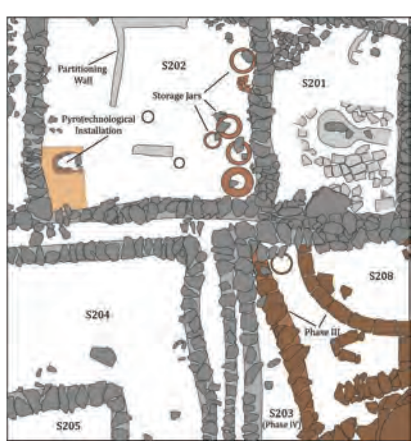

Figure 8.5 Köhne Shahar, excavated structures of the eastern neighbourhood, Trench 13I5, phase III in brown, phases IV–V in grey (Samei and Alizadeh 2020: Figure 4a). Image courtesy of Karim Alizadeh).

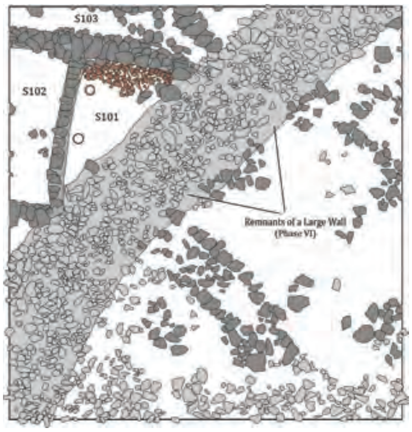

Figure 8.6 Köhne Shahar, excavated structures of the eastern neighbourhood, Trench 13J1, phase III in brown, phases IV–V in grey (Samei and Alizadeh 2020: Figure 4a) (image courtesy of Karim Alizadeh).

Figure 8.7 Köhne Shahar, ETC ceramics (K. Alizadeh *et al.* 2015: figs 17–19) (image courtesy of Karim Alizadeh).

rare painted ETC wares that show tenuous connections with Ninevite 5 painted wares well to the southwest in Upper Mesopotamia (K. Alizadeh *et al.* 2015). There are also extensive areas of specialised craft production within architectural contexts both curvilinear and rectilinear (Figures 8.4–8.6), including use of imported bitumen and specialised working of stone beads, bone, deer antler, cattle horn and textiles (K. Alizadeh *et al.* 2018b; Samei and Alizadeh 2020).

Investigations at the 6 ha mound of **Kul Tepe** near Jolfa in the Araxes valley have established its occupation from Early Chalcolithic (Chapter 6) through ETC I–III and into the Middle Bronze and Iron Ages, a unique sequence for this region of Iran (Abedi *et al.* 2014b; Abedi and Omrani 2015; Abedi 2016a). There appears to be a break of 300–350 years, however, between the Late Chalcolithic and ETC I occupations at the site, the latter represented by both circular and rectilinear mudbrick architecture (Figure 8.8). For their chipped stone tools the occupants relied on obsidian either from sources at Syunik in Armenia and Meydan Dağ in the Lake Van region (Nadooshan *et al.* 2013; Abedi *et al.* 2018a) or from possible sources inside Iran at Sahand and Sabalan mountains north of Ardebil (Niknami *et al.* 2010), with much evidence for use of sickle blades. Other finds include the only known ETC cylinder seal, bearing designs identical to those incised on ceramics (Figure 8.9), a possible stamp seal with simple geometric design (Figure 8.9), basic bronze artefacts and animal figurines including a humped zebu bull (Figure 8.10). Caprines and cattle were the main exploited animal species (Figure 8.20) (Davoudi *et al.* 2018).

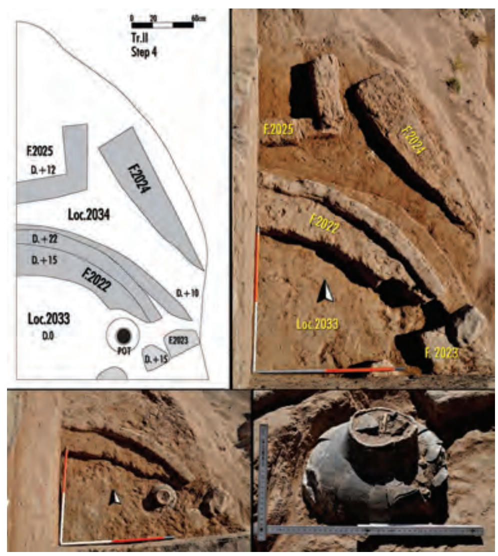

Figure 8.8 Kul Tepe, ETC II–III architecture (Abedi and Omrani 2015: Figure 9) (image courtesy of Akbar Abedi).

Figure 8.9 Kul Tepe, possible stamp seal and cylinder seal (Abedi and Omrani 2015: Figure 12; Abedi 2016a: Figure 15) (images courtesy of Akbar Abedi).

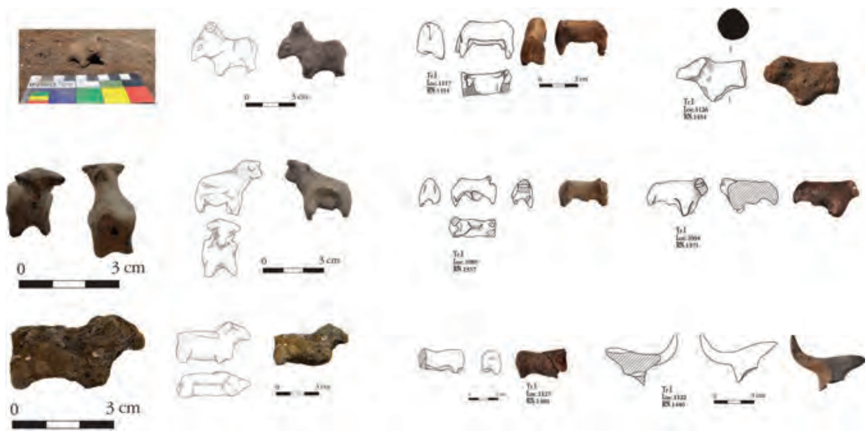

Figure 8.10 Kul Tepe, animal figurines (Abedi and Omrani 2015: Figure 13; Abedi 2016a) (images courtesy of Akbar Abedi).

Other sites in this extreme northern region of Iranian Azerbaijan such as **Tepe Baruj** (K. Alizadeh 2008; Abedi *et al.* 2009; Omrani *et al.* 2012) and **Nadir Tepe** (K. Alizadeh 2007; K. Alizadeh *et al.* 2018a) also appear to have levels dating to ETC 1 with some continuity from Late Chalcolithic into Early Bronze Age and obsidian also arguably originating from Iranian volcanic sources (Agha-Aligol *et al.* 2015). Excavations at the 5 ha site of Nadir Tepe have uncovered circular mudbrick buildings succeeded by rectilinear structures with typical objects including andirons and large storage jars, with an ETC sequence spanning *c.* 3100–2425 BC. Regional surveys of the region more broadly indicate significant Late Chalcolithic and Early Bronze Age presence and probable continuity in settlement (K. Alizadeh and Ur 2007; Omrani *et al.* 2012).

The important site of **Kohneh Pasgah**, at some stage to be flooded under the waters of the Khoda Afarin Dam, is located in the far north of Iran on the south bank of the Araxes river valley, approximately equidistant between Lake Urmia and the Caspian Sea (Maziar 2010, 2015), thus within the ETC heartlands of the Kura-Araxes valleys. Kohneh Pasgah, like the adjacent site of Kohneh Tepesi, has a deep sequence of ETC occupation from Late Chalcolithic through much of the Early Bronze Age with some 18 m of accumulated deposits. Continuity of occupation, including some aspects of the pottery assemblages from Late Chalcolithic into Early Bronze Age I, in contrast to ETC sequences at sites further south in Iran (and elsewhere in the expanded ETC world after *c.* 3000 BC – see below), confirms the site's probable situation within or close to the ETC zone of origin (Maziar and Zalaghi 2018, 2021). ETC architecture at Kohneh Pasgah comprises a circular structure of plastered mudbrick and wattle and daub, radiocarbon dated to *c.* 2800–2670 BC. Typical ETC portable hearths or andirons were found on the floor, and there was a focus on cattle and goat as meat resources (Figure 8.20) (Mohaseb and Mashkour 2017: 164; Davoudi *et al.* 2018; Decaix *et al.* 2019a). Pottery of the Early Bronze Age phases has good ETC II parallels at sites in Iran such as Geoy Tepe and Yanik, and also in Georgia and Nakhchivan. There is some evidence that Kohneh Pasgah was abandoned following flooding of the Araxes valley in the ETC II phase (Maziar 2010: 175). A rare study of chipped stone tools from an ETC site, that of **Kohneh Tepesi** (Figure 8.11) adjacent to Kohneh Pasgah, reveals that obsidian tools were produced by non-specialists probably at a distributed household level, while chert tools mainly in the form of large bifacial sickle blades were produced at a more standardised and specialised level (Figure 8.12) (Jayez *et al.* 2017).

Yanik Tepe on the eastern shores of Lake Urmia to the west of Tabriz is effectively the type site for the Iranian ETC, giving its name to the designation "Yanik Sphere" employed by some scholars (Abdi 2012: 26). Yanik is located on a fertile plain at the north-eastern edge of the Urmia basin (Burney 1961a; reports and syntheses on Yanik include Burney 1961b, 1962, 1964; Burney and Lang 1971; Summers 1982, 2004, 2013a, 2013b, 2014, in press; Voigt and Dyson 1992: 175–176). Following the site's occupation during the Late Neolithic (Chapter 5) and brief Middle Chalcolithic presence, the site was abandoned until the ETC settlement, the earliest of which belongs to ETC II. The ETC presence at Yanik appears to shift through time across the mound, making it difficult to estimate its extent at any time, but it appears always to have been less than 8 ha throughout the 6.5 m depth of deposits (Summers 2013b: 173). Geoffrey Summers' (1982, 2004, 2013a, 2014) detailed analysis of the Yanik excavations identified 14 successive levels of round-house occupation and four levels of rectilinear settlement.

The earliest ETC levels at Yanik Tepe are of the ETC II phase, arguably datable to *c.* 2900 BC. These levels at Yanik are characterised by well-spaced circular mudbrick structures. Subsequent levels have increasingly

Figure 8.11 Kohneh Tepesi during excavation, with the Araxes river beyond (Jayez *et al.* 2017: Figure 2) (photo credit: Mozhgan Jayez).

Figure 8.12 Kohneh Tepesi, bifacial chert sickle elements (Jayez *et al.* 2017: Figure 6 (photo credit: Mozhgan Jayez).

dense and complex circular houses (Figures 8.13–8.14) (Summers 2013b: Figure 9.1). The round buildings measure 3–5 m in diameter with some more complex structures containing bins, platforms, niches and standardised forms of cooking installations with flat ovens, sunken fire pits containing firestones and gypsum-plastered trays. One structure, Circle 1, has two concentric walls as well as inner partition walls, and between the buildings there are communal open spaces. Roofing was constructed of light wattle and daub laid over a wooden superstructure, supported by wooden posts. There is considerable evidence for burning of significant areas of the settlement, and buildings were continually rebuilt following destruction by fire through a total of

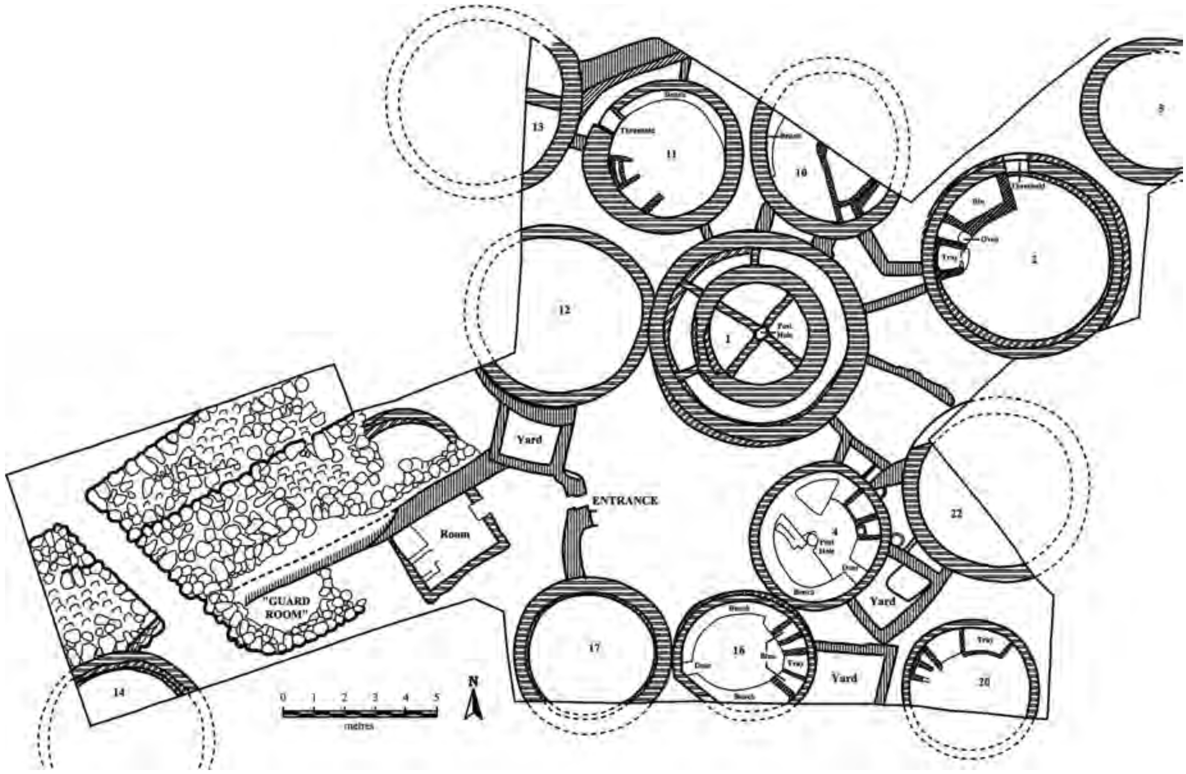

Figure 8.13 Yanik Tepe, ETC II plan of level 15 (Summers 2013b: Figure 61) (image courtesy of Geoffrey Summers and Peeters Publishing).

Figure 8.14 Yanik Tepe, ETC II level 14 circular structures (Summers 2013b: Figure 73) (image courtesy of Geoffrey Summers and Peeters Publishing).

14 stratigraphic levels in the ETC II phase. A substantial construction of large stones surmounted by mudbrick upper courses served either as a defensive perimeter wall or possibly as a platform leading to an elevated communal area in the centre of the settlement. In either case, this massive structure indicates a degree of communal engagement in its planning and construction.

Ceramics of the earlier ETC levels, ETC IIA, at Yanik comprise significant proportions of vessels with incised and excised decoration, almost always filled with white paste after firing (Figure 8.15). Decorative motifs include double spirals, birds, highly stylised ibex and geometric bands and panels. At some point within the ETC II round building phase, however, there is a gradual but distinct change in that the decorated ceramics cease almost entirely by the ETC IIB phase. Subsequently, there is an increase in production of fine cups with highly burnished black sheen alongside ongoing domestic wares. All ETC ceramics at Yanik are handmade. The succeeding phase

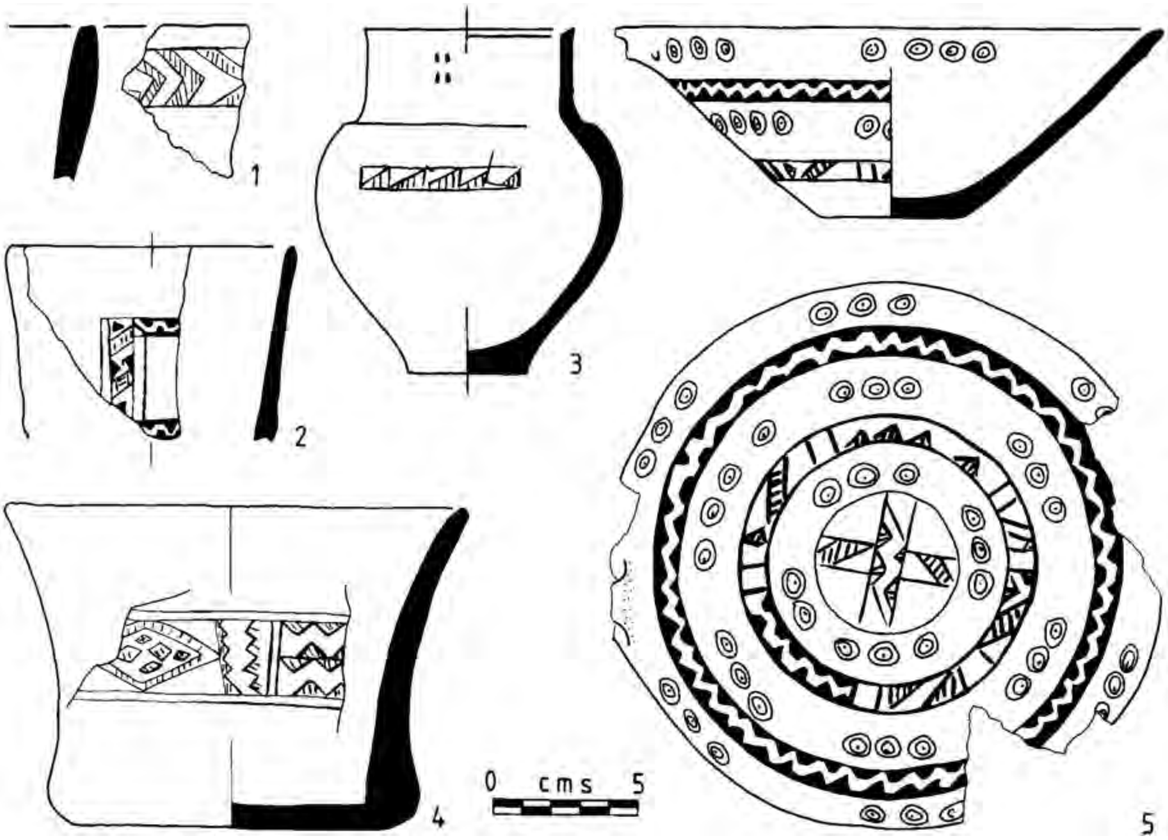

Figure 8.15 Yanik Tepe, ECII pottery with white-filled incised and excised decoration (Summers 2004: Figure 9) (image courtesy of Geoffrey Summers and Peeters Publishing).

Figure 8.16 Yanik Tepe, ETC III rectilinear architecture (photo credit: Charles Burney, supplied by Geoffrey Summers).

at Yanik, of ETC III phase, is marked by a switch in architectural layout, from round to rectilinear, and occasionally two-storey buildings, frequently rebuilt through time (Figure 8.16) (Summers 2013b: Figure 9.3). There may be a hiatus of uncertain duration between the ETC IIB and ETC III levels at Yanik. The ETC III structures include the same range of internal fittings as found in the earlier circular buildings, suggesting continuity in household activities. Pottery of ETC III at Yanik shows development from the preceding later ETC IIB levels with further emphasis on plain, undecorated wares. Investigations have taken place at other Early Bronze Age sites on the eastern side of Lake Urmia, including Topraghli Tepe and Tepe Shiramin (Omrani *et al.* 2012), where there appear to have been varied degrees of ETC impact on local cultures.

Located on the Salmas plain in the western Urmia basin, **Haftavan Tepe** is one of the largest mounds of the region. Like Yanik Tepe, on the other side of Lake Urmia, Haftavan has occupation of both ETC II and III phases (reports and discussion on Haftavan ETC levels include Burney 1970, 1972, 1973, 1975, 1976; Summers 2013b). In level VIII, two simple circular houses were excavated of ETC IIB date (Burney 1973: Figure 1), with ceramics comparable to Geoy Tepe and the Lake Van region of eastern Anatolia. Haftavan VII occupation dates to ETC III and comprises substantial rectilinear mudbrick buildings similar to those of ETC III date at Yanik Tepe (Burney 1973: Figure 2). Limited archaeobotanical evidence from Haftavan VIII shows use of a full range of cereal crops, flax and pea (Summers 1982: 169–171). Most commonly exploited animals include cattle, goat and sheep, with some hunting of wild pig, equids, gazelle and red deer (Figure 8.20) (Mohaseb and Mashkour 2017; Davoudi *et al.* 2018). The strong focus on cattle as the major meat resource, as opposed to goat, which is the more typical focus across the Iranian plateau, is a distinctive feature of Bronze and Iron Age sites of Iranian Azerbaijan (Mohaseb and Mashkour 2017: Figure 11.14).

Gijlar Tepe is a large mound with a long sequence of ETC occupation through 13 m of its 25 m total deposits (Pecorella and Salvini 1984; Summers 2013b). The architectural sequence of circular to rectilinear, as attested at Yanik and Haftavan, also appears to hold at Gijlar although the evidence comes from limited area exposure. Ceramics are again in the same vein as Haftavan VIII/VII and Geoy Tepe. ETC levels at **Geoy Tepe**, also in the western Urmia basin, comprise circular buildings of ETC II date (Burton-Brown 1951; Crawford 1975; Piller 2012a; Summers 2013b), and ceramics comparable to those of Haftavan VII, Gijlar and the Van region. The ETC levels at Geoy Tepe occupy at least 6 m of the mound's stratigraphy.

At the south-western corner of Lake Urmia there are 11 substantial burial tumuli at **Sé Girdan**, several of which have been excavated, yielding distinctive artefacts of arsenical copper-bronze and carnelian beads (Deshayes 1973; Muscarella 1973, 2003; Kohl 2007: 85–86). Originally dated to the Iron Age III period, it is clear that they in fact belong to the mid-later fourth millennium BC, representing the southernmost extent of the Maikop culture of the north-western Caucasus. Bertille Lyonnet (2000: 309–310) has noted that raw materials such as arsenical copper and carnelian, both richly attested in early Maikop kurgan tombs in the steppe region, probably originated from Iranian sources. To the south of Lake Urmia the site of **Hasanlu** has levels of ETC date following a hiatus in occupation after the Chalcolithic levels (Chapter 6), but exposed only in small soundings (Danti *et al.* 2004; Summers 2013b). Hasanlu level VII appears to be contemporary with the ETC II sequences of Yanik and Haftavan VIII, probably ceasing at *c.* 2500 BC at Hasanlu where ETC ceramics overlap with local Urmia basin traditions known as Hasan Ali and Painted Orange Wares (Danti *et al.* 2004; Danti 2013a: 12; Helwing and Neumann 2014: 53–54), as excavated at **Barveh Tepe** in the Lesser Zab basin to the south of Hasanlu (Sharifi 2020). Animal remains of ETC levels at Hasanlu comprise principally caprines and cattle (Figure 8.20) (Davoudi *et al.* 2018). Further southwest along the valley of the Lesser Zab river in western Iran and into Iraq there appear to be no traces of an ETC presence (Abedi *et al.* 2019).

ETC borderlands 1: the Qazvin plain, Gilan and western Mazandaran

Significant evidence for ETC presence comes from the region of the Qazvin plain to the west of Tehran. The site of **Tepe Shizar** sits in the hills southwest of the Qazvin plain, in a natural route connecting the plain with the Zagros range to the west (Fazeli Nashli *et al.* 2013b: 114). This location is significant in that it indicates a specific route by which ETC people, ideas and/or materials might have moved across the southern limits of the north-west Iranian highlands from the Alborz to the Zagros, enabling access to the outlying ETC regions of Hamadan, Malayer and Kangavar, where Godin Tepe is situated (see below). Typical ETC decorated pottery from Shizar dates to *c.* 2900 BC and is found alongside local red, grey and buff wares. ETC pottery is also found at other sites around but not on the Qazvin plain (Fazeli Nashli *et al.* 2013b: 122), including Tepe Duneh and Doranabad (Piller 2012a). One mystery is the dearth of evidence for ETC presence on the Qazvin plain itself, which seems to have been abandoned for up to 1,700 years from *c.* 3500 BC (Fazeli Nashli *et al.* 2013b: 126). If ETC populations were on the move in search of arable land why did they not settle on the fertile fields of the Qazvin plain? It may be that in this region they were more comfortable inhabiting the mountainous fringes of the plain where they could focus on animal herding rather than arable cropping. There is also the possibility of burial of ETC sites under more recent alluviation.

In the Gilan region along the south-western reaches of the Caspian Sea, ETC ceramics have been encountered at sites such as Diarjan (Fahimi 2005; Piller 2012c: 123). Some of the easternmost ETC evidence so far encountered in Iran comes from ongoing excavations at the site of **Arastu Tepe** in the Malard region of Tehran province, where decorated red burnished ETC pottery has been recovered but as yet there is little information on this site. Related ETC sites in this broad region include Barlekin and Tepe Ostur, west and southwest of Tehran, and Tepe Kelar and Ghal-e Ben in western Mazandaran province by the Caspian Sea (Burton-Brown 1981; Piller 2012a, 2012b; Ghasemi 2017; Kouhpar *et al.* 2017; Heydari *et al.* 2018). ETC occupation at these sites appears to be late in the ETC sequence at *c.* 2500–2400 BC. To the south of Tehran in the region of Qom, ETC materials from the site of **Qoli Darvish** represent the furthest limits of the ETC phenomenon (Azarnoush and Helwing 2005: 207–208; Piller 2012a: 452; Alizadeh *et al.* 2013b) and this is the only site in Iran, or anywhere, to have yielded evidence of both a Proto-Elamite and an ETC presence, although separated by a significant hiatus following abandonment of the Proto-Elamite levels at the site at about 2900 BC (Chapter 7). The ETC materials from Qoli Darvish are situated within a context of local ceramic materials, lacking some features of classic ETC pottery such as incised/excised decoration and white paste infill, which suggests rather a local imitation of the ETC tradition than a full incorporation and absorption of the ETC worldview. Here we have reached the south-eastern marches of the ETC world.

ETC borderlands 2: the central Zagros region

The most important site in the central Zagros with ETC evidence is the multi-period mound of **Godin Tepe**, located at the southernmost edge of the ETC impact (Young 1969; Young and Levine 1974; Rothman 2011). After the abandonment of the Late Chalcolithic Oval Enclosure (Chapter 6) and a probable hiatus in occupation, an ETC settlement develops at Godin in level IV (Rothman 2011: 162; Potts 2013b: 206). Within Godin IV, which endures for about 250 years from *c.* 2900 BC, there are several architectural phases, commencing with modest rectilinear buildings in phase IV:2, and progressing to substantial structures, largely rectilinear but with some curving walls in phase IV:1. A large two-roomed structure, Building 3, is in use through much of the ETC presence at Godin (Figure 8.17). Building 3 has black-painted benches around the sides of its anteroom, with a simple pattern of lines on one wall (Rothman 2011: Figure 5.10). Within the anteroom there were considerable quantities of animal bones and some ceramic vessels, probably remains from feasting in this special building. The

Figure 8.17 Godin Tepe, plan of period IV:1a2 (Rothman 2011: Figure 5.17) (image courtesy of Hilary Gopnik).

rear room of Building 3 contained items used in food preparation, including a quern, grinding stones, cutting tools and serving vessels. The building is interpreted as serving "a public function, possibly as a place for ritual sacrifice or public feasting" (Rothman 2011: 184). Other ETC buildings at Godin appear to be modest houses with evidence for a range of domestic activities. The last phase of ETC occupation includes a plastered white platform that may have been part of a cultic centre towards the summit of the mound.

ETC ceramics from Godin IV are fairly consistent through the succeeding phases (Levine and Young 1987; Rothman 2011: 167–174). Pots are handmade and come in a range of colours, including black, grey-brown, grey and pale red. Vessels are usually burnished and the fabric and firing technology is basic, with firing at low temperatures (Henrickson 2011a), but no pottery kilns or dedicated craft production areas have been found in ETC levels at Godin, or at other ETC sites in Iran, with the possible exception of a metal-working installation in level IV:1a at Godin (Rothman 2011: 175) and significant craft evidence from Köhne Shahar. A new attribute in level IV at Godin is the inclusion of ground up pottery fragments, or grog, as temper within the fabric, a practice that ceases at Godin with the end of the ETC occupation. As Mason and Cooper (1999: 27) say,

> the sudden introduction of a new technological approach to ceramic production, in this case the introduction of grog-tempering, coupled with a completely new stylistic expression in period IV at Godin Tepe, seems to be a significant indicator of the introduction of a new group of people.

Diversity in the mineral composition of ceramic fabrics at Godin and other ETC sites on the Kangavar plain, along with the consistent use of grog temper, have been proposed by Mason and Cooper (1999: 29–30) as indicative of pottery production by societies with some degree of engagement in pastoral nomadism. Regular movements around the landscape would develop their knowledge of regionally available clay sources, and the use of grog would make sense as a consistent form of temper and, moreover, would be an economical way to recycle broken pots at any stage during their seasonal movements.

Ceramic forms include bowls, cooking pots, storage jars, trays, cups and lids, an assemblage befitting practices such as preparation, serving and eating of food by individuals or small groups (Figure 8.18). Cooking methods involved stewing by placing cooking pots on top of andirons (portable hearth stands) and frying of meat and vegetables on griddles with inbuilt drains (Rothman 2011: 173). Decoration on the exterior of vessels includes incision and much use of white paste infill. Motifs are simple, with crosses, swirls, and indented triangles most common (Rothman 2011: Figure 5.48). Rothman's (2011: 192) stylistic analysis suggests that individual households in the earliest ETC phase at Godin may have "owned" specific sets of motifs, whereas in the later phases the motifs are more evenly distributed amongst the houses. This transition may indicate a social development towards a stronger sense of community. Parallels for the Godin IV pottery are most closely found in the Urmia basin, at Yanik Tepe and Gilan, but also in the Murat river region of the Upper Euphrates in eastern Anatolia (Rothman 2011: 193). Suggestions of continuity in ceramic technology from levels IV into III at Godin (Henrickson 1987) are not supported by more recent studies, which identify a clear break in fabrics and manufacturing techniques at the end of level IV, even if some of the vessel forms continue (Mason and Cooper 1999: 29).

Figure 8.18 Godin Tepe, typical Godin IV beaker or cup (Rothman 2011: Figure 5.27) (image courtesy of Hilary Gopnik).

Other artefacts from Godin IV include chipped stone tools, with many chert sickle blades and evidence for on-site knapping (Edens 2002), ground stone tools for grain and plant processing, a range of polished bone tools for textile and leather working, and clay animal figurines. Animal remains are dominated by sheep, goat and cattle in that order, with rare pigs and equids (Crabtree 2011: 178; Piro and Crabtree 2017). Kill-off patterns of the sheep and goat, including an absence of young animals, suggest a shift from herding principally for meat in level VI (Late Chalcolithic) to herding for renewable products such as wool, hair and milk in the ETC levels.

Apart from Godin, Young (2004: 654–656) also proposed that the sites of Karkhaneh, Tepe Giyan, Baba Gassem and Tepe Sangalan near Hamadan, all in the central Zagros region, may have been major ETC settlements, even towns, but our knowledge of the ETC levels at these sites is minimal. Mason and Cooper's (1999) analysis of ETC sherds from several of these sites demonstrates the use of grog-tempering, as at Godin IV, but with local diversity in choice of specific fabrics, a pattern also detected through analysis of ETC ceramics from several sites on the Kolyaei plain north of Kermanshah city (Heydarian and Ghorbani 2016; Heydarian *et al.* 2020). The southernmost evidence for ETC spread is found in the province of Markazi at Tapeh Qal'eh-ye-Sarsakhti, to the southeast of Godin Tepe (Abedi *et al.* 2014a).

Otherwise there is so far no convincing evidence for an ETC presence in the western parts of the Zagros including the Sarfirouzabad plain (Niknami and Mirghaderi 2019), the Lesser Zab river valley (Abedi *et al.* 2019) and western Luristan (Abbasnejad Seresti and Rezaei 2018). ETC ceramics have been found at multiple sites on the plains of Malayer, Hamadan and Kangavar in the central Zagros region but not on plains to the west such as the Mahidasht and Islamabad (Swiny 1975; Howell 1979; Young 2004: 658; Abdi 2012: 28), nor across the border on the Shahrizor plain of Iraqi Kurdistan (Altaweel *et al.* 2012). We may also mention the site of Tepe Pisa on the outskirts of Hamadan city, which has been proposed as a large ETC settlement, but excavations suggest much of the occupation there dates to the second half of the third millennium BC, after the end of ETC presence in the region (Chevalier 1989; Mohammadifar *et al.* 2009). ETC sites have not been detected south of Kermanshah but are found in the Sahne and Songhor regions in the north and northeast of Kermanshah province, bordering Hamadan to the east (Heydarian 2015; Heydarian *et al.* 2020).

A lack of detected ETC sites in the Harsin region east of Kermanshah (Naseri and Chehri 2016) highlights the Bisotun massif and its associated routeways as a significant boundary beyond which the ETC phenomenon failed to penetrate. This lack in itself is an intriguing attribute of the ETC settlement distribution, as penetration south of the Bisotun massif would have opened up access to the Great High Road running directly south of Bisotun, one of the major routeways of ancient Iran as we have seen. Failure to control and exploit this route for the distribution of ETC characteristics strongly suggests that the requirements for incoming ETC settlers, if such they were as seems increasingly probable (see below), were focused above all on gaining access to specific ecological and agro-pastoral environments rather than on establishing control of major transregional routeways that might have been critical to the movement of cherished, high-status exotica such as metals and semi-precious stones. In turn, this attribute aligns with the generally low-key, exotica-poor nature of ETC material culture assemblages. "Back to basics" could have been their motto. Let us now draw out some of the key features of ETC settlement and society as we are able to articulate them from the evidence accumulated in the excavations and surveys detailed above.

ETC settlement patterns in Iran

As Stephen Batiuk (2013) has stressed in his remarkable analysis of no fewer than 682 sites across the entire ETC world, the relative dearth of excavated and published sites means that we need to rely heavily on settlement information from surveys. Surveys and preliminary excavations in far north-western Iran, and elsewhere, start to contribute to our understanding of ETC settlement patterns (Omrani *et al.* 2012; Maziar 2019). On the basis of available excavated and surveyed evidence, from within and beyond Iran, we can provisionally underline specific attributes of ETC settlements. ETC sites tend to be (a) new foundations on abandoned sites; (b) long-lasting, frequently through multiple centuries; (c) concluding in abandonments followed by a hiatus in occupation; (d) small, dispersed villages. Let us consider each of these points in turn.

ETC sites as new foundations

The southern Araxes valley and regions of north Iranian Azerbaijan, including the site of Kohneh Pasgah, are the only areas of Iran to show some evidence, not always convincing, for a degree of cultural continuity from Late Chalcolithic into the Early Bronze Age (Maziar 2010; Omrani *et al.* 2012; Maziar and Zalaghi 2018, 2021). As for the rest of Iran, as Summers (2013b: 169) puts it, "Everywhere, it seems, there is discontinuity and very probably a hiatus" prior to ETC occupation, an interpretation that applies equally to those regions of eastern Anatolia impacted by ETC spread (Conti and Persiani 1993: 406; Palumbi and Chataigner 2014). At Godin Tepe there is a break between period VI and the ETC level, IV (Rothman 2011: 162; Potts 2013b: 206), while almost all ETC sites on the Kangavar plain are new foundations (Young 2004). Indeed, the ETC settlement pattern of the Kangavar plain is utterly changed from the preceding Late Chalcolithic pattern, with a new preference for living in larger sites (Godin and the unexcavated site of Karkhaneh) surrounded by greater numbers of small sites (Young 2004: table 3). At Yanik there is no occupation between Early/Middle Chalcolithic and ETC (Summers 2004: 623), and at Hasanlu to the south of Lake Urmia, at Kul Tepe near Jolfa and at sites on the Qazvin plain, ETC levels occur after gaps following the Late Chalcolithic period (Danti *et al.* 2004; Fazeli Nashli and Abbasnegad Seresty 2005; Abedi *et al.* 2014b). In the southern Caucasus there is mixed evidence for local development of early ETC from pre-existing societies of the region (Akhundov 2004: 431; Kohl 2007: 69, 89; Rova 2014).

It is striking that in many regions ETC settlements rarely occur as new foundations on plains. Instead they tend to cluster in foothill and upland regions or are founded on top of existing, previously abandoned mounds. Whether this distinctive pattern is due to a desire to maximise the use of arable land, or to some climatic factor affecting the environment of plains in a way inimical to settlement, such as flooding or heavy alluviation, is not clear. It may also be the case that small, flat ETC sites on the plains do exist but have been buried under Holocene alluvium since their abandonment (Schmidt and Fazeli 2007). On the Kangavar plain, by contrast, ETC sites are located firmly on the plain, usually in close association with water sources (Young 2004: 656).

Duration of settlement at ETC sites

Once a site was settled by ETC incomers then often a lengthy ETC presence followed at that site, sometimes for multiple centuries as at Kul Tepe, Nadir Tepe, Yanik, Haftavan, Gijlar, Hasanlu, Kohneh Pasgah, probably at Geoy Tepe and Godin, and at multiple ETC sites outside Iran. The tendency for ETC occupants frequently to demolish and rebuild their mudbrick houses led to rapid and deep accumulation of mounded deposits as encountered at many ETC sites (Figure 8.19) (Kohl 2007: 76, 88). ETC deposits at sites in southern Azerbaijan, for example, range from 6 to 9.5 m in depth (Bakhshaliyev *et al.* 2009: 84). This longevity of occupation suggests both considerable forethought and specific requirements in choice of location by ETC migrants and a conservative sense of attachment to place once a connection had been made.

Abandonment of ETC sites

At Yanik, Haftavan and Gijlar in the Urmia basin, at Kohneh Pasgah in the Araxes valley, at Nadir Tepe and Tepe Zarnaq (Nobari and Kamrani 2017), at Ghal-e Ben in Mazandaran (Heydari *et al.* 2018), and at Godin in the central Zagros, the end of ETC occupation is followed by abandonments of uncertain duration (Maziar 2010: 171; Rothman 2011: 164; Summers 2013b: 169), perhaps lasting "about one century" from *c.* 2700 BC at Godin before the start of Godin III:6 (Potts 2013b: 206–207). At Nadir Tepe there is convincing evidence for extensive destruction by fire of the final ETC occupation levels, succeeded by a hiatus in occupation until resettlement

Figure 8.19 Yanik Tepe, deep sequence of stratified ETC deposits (Summers 2013b: Figure 10) (image courtesy of Geoffrey Summers and Peeters Publishing).

in the Middle Bronze Age (K. Alizadeh *et al.* 2018a). Nor is there any indication of continuity in the ceramic repertoires that succeed the ETC, such as polychrome Urmia ware, Van-Urmia Ware, the Yayla Culture ceramics of the Van region (Edwards 1981, 1986; Belli and Baxşäliyev 2001; Özfirat 2001; Rubinson 2004; Summers 2013b: 170), the painted wares of Godin III (Mason and Cooper 1999: 29; Henrickson 2011a), and the grey and red wares of Mazandaran and north-eastern Iran (Heydari *et al.* 2018). Indeed, our knowledge of human societies of north-western Iran following the collapse of the ETC phenomenon is extremely limited. As in north-western Iran, across eastern Anatolia the settlement patterns and the ceramic assemblages of the post-ETC Middle Bronze Age are completely changed in character (Özfirat 2001; Marro 2011: 305). In northern Iran ETC occupation is succeeded, after a hiatus of uncertain duration, by settlement at sites such as Ghal-e Ben with new burial practices suggestive of greater social stratification (Heydari *et al.* 2018; Fazeli Nashli *et al.* in press-a). In Transcaucasia the settlement pattern changes dramatically at the transition from Early to Middle Bronze Age, with abandonment of multiple settlement sites and the new appearance of burial mounds and new painted ceramic styles (Edens 1995; Kohl 2007: 112–113). In the southern Caucasus, including along the southern banks of the Araxes river, ETC settlements are abandoned by about 2400 BC and kurgan tumulus burials appear across the region, heralding "a new way of life predicated on increased mobility, social inequality, and a politics of charismatic militarism" (Smith 2012: 679). Only in eastern Anatolia do ETC traditions and material culture habits appear to survive through the later third and even into the early second millennium BC (Smith 2012: 681).

Scale and density of ETC settlements

There is little evidence for complex hierarchy amongst ETC settlements, nor for what one might call towns (Batiuk 2013; Summers 2013b; Rothman 2018). Cuyler Young's (2004) survey of the Kangavar plain detected a two-tier hierarchy of ETC settlement, headed by two large and long-lived mounded sites, Godin and Karkhaneh, with much smaller surrounding villages and hamlets, an interpretation based on the questionable assumption of complete occupation of sites in attested periods. The site of Köhne Shahar (Ravaz) in the far northwest of Iran is unique in having a fortified citadel and a lower town covering some 15 ha in total but our understanding of the role and significance of this site within the ETC world is still preliminary, and precise dating of the major surrounding wall is as yet uncertain (K. Alizadeh *et al.* 2015). It has been estimated that at Yanik Tepe in ETC II there may have been up to 300 round houses supporting a population of 1,000 or more (Summers 2004: 626). The vast majority of ETC sites appear to be relatively small, dispersed villages (Kohl 2007: 90), rather reminiscent of Late Neolithic farming settlements of a much earlier time and technologically not vastly different from them either.

ETC identity: society and economy

In some respects, the ETC phenomenon in Iran can be defined as much by what it lacks as by what it possesses. The Iranian ETC lacks (or more cautiously, as yet lacks evidence for): complex, multi-functional settlements (i.e. towns or cities, with the possible exception of Köhne Shahar); public buildings in the form of high-status residences, large-scale temples or administrative structures; writing, seals and sealings; elaborate human burials, and; evidence for warfare or conflict (with the possible exception of Nadir Tepe). Within Iran, with the exception of Köhne Shahar (Samei and Alizadeh 2020), we also have no indications of supra-domestic modes of production, for example of ceramics or metalworking (Henrickson 1988; Summers 2014: 165). In the Transcaucasus there is evidence for specialised metalworking but with small-scale production (Edens 1995: 54). The positive features of ETC in and beyond Iran – the handmade, low-tech, decorated ceramics, the widespread use of basic arsenical-copper artefacts (Courcier 2007), the mixture of round and rectilinear mudbrick and wattle and daub architecture, the use of standard domestic cooking installations, and an emphasis on hearths in fixed or portable forms in distinctive shapes (andirons) – are remarkably uniform across the ETC world, and they suggest a strong sense of social and family kin, binding and connecting ETC societies through space and time while allowing for a significant degree of regional diversity underlying this "cultural skin" (Palumbi and Chataigner 2014: 253).

Moreover, Smith (2012: 677) has commented on how the social boundaries of the ETC world appeared to have been "tightly regulated," in that there is little evidence for contact and interchange between the inside of the ETC world, huge as it was, and the outside of the ETC world, at least as regards Upper Mesopotamia and north-western Iran. Smith (2015: 125) characterises ETC as "a virtually self-contained repertoire" that "reproduced a sense of proper social life centred on the hearth, elevating values of domesticity and precluding the kind of social segmentation that was developing in neighbouring regions, a social affirmation of egalitarianism." As Toby Wilkinson (2014: 205) points out, commenting on the lack of cultural seepage from contemporary neighbouring societies, "it as though such features were actively rejected" while Geoffrey Summers (2014: 165) posits the entire ETC zone as "a barrier to long distance international trade or exchange rather than a facilitator, even less a stimulant," chiming with our point above about apparent lack of ETC interest in controlling the Great High Road despite ETC villagers being settled so closely to it. Might this have been because the Great High Road and its associated movements of cherished commodities were under the control of other socio-political entities of the time, including Proto-Elamite traders and bureaucrats, who were clearly in control of the Great High Road in its reaches along the plains south of the Alborz range as we saw in Chapter 7, or the Early Bronze Age inhabitants of Luristan with their artefact-rich cemeteries (see below), or the city-dwellers of the Mesopotamian and Khuzestan plains with their eagerness to sustain access to metals and other materials from the eastern highlands, who deliberately kept ETC communities at bay? Exactly how such internal and external relationships were articulated and sustained through centuries of occupation at ETC sites specifically in the uplands of north-western and western Iran, and far beyond, is at the moment difficult to discern. Significant advances in our knowledge and understanding await fully modern inter-disciplinary excavation and analysis at key ETC sites within Iran coupled with much sharper chronological resolution.

ETC architecture in Iran is generally modest in scale, with a range of circular and rectilinear structures. Only at Köhne Shahar do we have significant evidence for architectural elaboration (K. Alizadeh *et al.* 2015), with a tripartite settlement structure comprising a citadel, a lower town and a communal open area, surrounded by a 2.5 m-thick defensive wall of basalt boulders. There is also extensive evidence for major craft activity including metalworking, textile production, bone, horn and antler working, and bitumen use. At other ETC sites in Iran, most buildings appear to be simple dwellings, often with distinctive cooking facilities. The size, scale and consistency through time and space of almost all ETC architecture strongly underline the social significance of the domestic household within ETC society. The motto "home and hearth" might have been invented to betoken the ETC way of life. The preparation and consumption of food in socially defined ways, using standard forms of vessels, andirons and cooking ranges, seems to have been an important cultural characteristic of ETC communities everywhere (Rothman 2018). Andirons in particular are characteristic of many ETC sites more broadly (de Miroschedji 2000: 262), and it may be that portable hearths served as domestic ritual installations as well as for daily cooking, as suggested by finds from sites in eastern Anatolia such as Pulur and Sos Höyük (Sagona 1998, 2011: 693; Kelly-Buccellati 2004; Rothman 2011: 150). The piercing of many ETC clay andirons by a single central hole may have permitted the use of bellows as a means of increasing fire temperature, suggesting a possible connection of these distinctive artefacts with metallurgical activity (Tonussi 2014).

Transcaucasian obsidian, occurring naturally in multiple sources of the region, is commonly used for cutting tools at widely distributed sites of ETC date, indicating varying degrees of participation in regional networks of exchange (Badalyan *et al.* 2004; Maziar and Glascock 2017; Abedi *et al.* 2018a). Indeed, pre-Bronze Age corridors of movement and exchange of east Anatolian and Transcaucasian obsidian, reaching into the central Zagros and many other regions of Southwest Asia (Wright 1969), would have served as well-trodden routeways for the spread of the ETC phenomenon from *c.* 3000 BC onwards. These routes include the two major north-south passages connecting north-western Iran with the central Zagros (Young 2004: 658; Omrani *et al.* 2012: 13–14). One route reaches from the northern Urmia basin southwards through Mahabad, Saqqiz and Sanandaj to Kermanshah and beyond, its use in ETC times supported by finds of ETC wares at sites such as Kurtavij Tepe on the Sahneh plain (Motarjem 2009). The other, more eastern, route heads south from Tabriz through Maragheh and Zanjan to the Hamadan plain, where at least 15 ETC sites were identified in the survey by Swiny (1975).

At both Yanik and Godin there are indications of impressive platforms leading towards the centre of the settlement that may have served some grander function. Within Iran, only Building 3 at Godin IV stands out as a distinctive non-domestic structure (Figure 8.17). In its simple plan and scale, with its single entrance, plastered benches, steps and associated platforms, Building 3 closely resembles cultic buildings from Upper Mesopotamia in the contemporary Ninevite 5 period. Such shrines are well-known from widely distributed early-mid third millennium BC sites, including Tell Brak, Chagar Bazar, Chuera and Mari (Matthews 2002b, 2003b). Indeed, within the Tell Brak HS4 shrine a solid clay stand with central hole, found in association with baked clay portable hearth fragments (Matthews 2003b: Figure 5.78: 4–6), is identical to ETC examples from Sos Höyük (Sagona and Zimansky 2009: Figure 5.20). These rare points of comparison suggest that Ninevite 5 and ETC communities were not only in contact with each other but that they may have shared and exchanged cultic and ritual practices.

Further intriguing areas of comparison between ETC and Ninevite 5 societies include low-hierarchy settlement patterns, mostly modest architecture, limited evidence for social hierarchy, a lack of evidence for writing (although use of cylinder seals is relatively common in Ninevite 5), limited human burial evidence and several structural similarities in ceramic assemblages (a resurgence of high-investment decorated pottery after a period dominated by plain wares; a new emphasis on handled cooking pots and circular lids for stewing; a high frequency of small cups and bowls as individual eating/drinking vessels; a low frequency of large storage vessels). These points suggest that ETC and Ninevite 5 societies were broadly similar in their degrees of complexity and in much of the specifics of their daily lives too, with an emphasis on domestic household scales of production, consumption and social engagement. The evidence can reasonably be characterised as suggestive of a heterarchical social nature, with flexible horizontal relationships between approximately equal partners throughout society (Samei and Alizadeh 2020).

A rare hint of significant social hierarchy within the ETC world comes not from Iran but from the so-called royal tomb of level VIB at Arslantepe on the Malatya plain in southern Anatolia, dated to *c.* 3000–2900 BC (Di Nocera 2000; Frangipane 2000: table 1, 2014; Frangipane *et al.* 2001; Batiuk 2013: 453–454; Palumbi 2019). The Arslantepe royal tomb is constructed at some time after the destruction of a massive Late Chalcolithic temple and palace complex, and coincides with their replacement by modest wooden and wattle and daub huts (Frangipane and Palumbi 2007: Figures 10–11). As at Godin Tepe, these modest structures of *c.* 3000 BC at Arslantepe were soon replaced by more substantial architecture including a large mudbrick two-roomed building with central hearth and storage vessels which, like the Godin IV:1 structure discussed above, has been interpreted as a special building with probable cultic functions (Frangipane 2014; Palumbi 2019).

Buried within the Arslantepe royal tomb were a principal male individual plus four young retainers, probably sacrificed (Frangipane 2001: 6, 2011: 982). Extremely rich grave goods include weapons, ornaments, metal vessels and ceramic jars, with many parallels to items of material culture from the south and north Caucasus, as well as from Upper Mesopotamia (Frangipane 2011; Marro 2011). Palumbi's (2008) interpretations of the tomb are either as that of a chief from a Caucasian community who regularly engaged in regional migration to the Upper Euphrates region of Arslantepe, or as that of a local leader with significant contacts with ETC Caucasian communities driven by exchanges in metal ores and manufactured high-status artefacts. The Arslantepe royal tomb stands in stark contrast to the collective tombs of ETC sites elsewhere (Smith 2012: 678; Palumbi and Chataigner 2014: 249), but our information on ETC human burials in Iran is virtually nil. Outside Iran, ETC evidence from the south Caucasus (Edens 1995: 54; Lyonnet 2000: 301, 2007a; Kohl 2007: 91; Poulmarc'h *et al.* 2014) and eastern Anatolia (Sagona 2004: 480–481) indicates human burial in pits and cist-tombs within settlements or adjacent cemeteries with modest grave goods. From the mid-third millennium BC, the burial evidence in the Transcaucasus changes dramatically with the appearance of collective burial in large kurgans (Smith 2012). The tombs at Sé Girdan in Iran appear to predate this episode, and may indicate much earlier connections, of the mid-later fourth millennium BC, between north-western Iran and the Maikop communities of the northern Caucasus.

We have some evidence for the economy of ETC settlements within Iran and also within Anatolia and the Caucasus (Marro 2011: 301). The assumption, based largely on information from ETC sites outside Iran (Kohl 2007: 94–95; Rothman 2011: 154–155; Batiuk 2013; Decaix *et al.* 2019b, 2019a), is that Iranian ETC communities were essentially farming villages, herding sheep, goat and cattle while cultivating wheat, barley and pulses, as sparsely attested at Haftavan (Summers 1982) and more fully at Ghal-e Ben in Mazandaran (Fazeli Nashli *et al.* in press-a; in press-b). Analysis of faunal assemblages from Kohneh Pasgah, Köhne Shahar, Kul Tepe and other ETC sites of north-western Iran (Figure 8.20) (Davoudi *et al.* 2018; Decaix *et al.* 2019a; Samei *et al.* 2019; Samei and Alizadeh 2020) indicates a heavy emphasis on herding of sheep and goat, with some cattle and negligible exploitation of pig, and minimal engagement in hunting of wild animals. Evidence from south Caucasus ETC sites reveals a strong

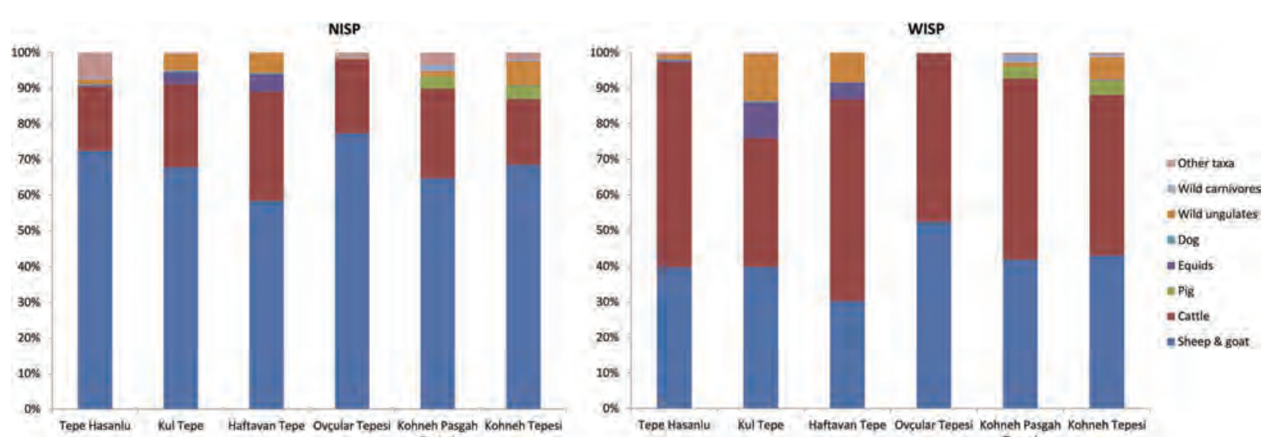

Figure 8.20 Faunal spectra from ETC sites in north-western Iran by percentage of the Number of Identified Specimens (NISP) and of the Weight of Identified Specimens (WISP) (after Davoudi *et al.* 2018: Figure 3).

reliance on cereals, with barley dominant at higher altitudes and minimal evidence for non-cereal crops such as pulses, alongside an element of pastoral transhumance of flocks of sheep and goat (Hovsepyan 2015). Oxen were probably used as plough animals, and a few ETC sites of Iranian Azerbaijan such as Kohneh Pasgah and Haftavan show a preference for cattle over goat as the main meat resource as well as displaying pathologies indicative of use of cattle as draught animals (Mohaseb and Mashkour 2017; Decaix *et al.* 2019a). Faunal remains from Ghal-e Ben in Mazandaran show a focus on sheep-goat husbandry during the ETC phase of occupation, with pig increasing in frequency in the post-ETC occupation at the site (Fazeli Nashli *et al.* in press-a). Clay figurines across the ETC world appear to focus on horned animals, cattle in particular, suggesting a special significance for cattle perhaps as draft animals as much as sources of meat and dairy products (Knudsen and Greenberg 2019; Samei and Alizadeh 2020).

There are indications that wine was important to ETC societies, an idea deftly elaborated by Stephen Batiuk (2013; see also Edens 1995: 54) who proposes a significant role for viticulture and viniculture as economic niches into which migrating ETC groups situated themselves, while at the same time utilising wine as a high-status commodity that enabled ETC migrants to sustain their distinctive social identity over long time periods, as the material evidence indeed suggests. Intriguingly, rare ETC archaeobotanical evidence from Kohneh Pasgah includes significant quantities of charred grape pips (Figure 8.21) (Decaix *et al.* 2019a). Support for Batiuk's argument comes from the fact that the vast majority of ETC sites, in and beyond Iran, are situated in regions in receipt of 400–600 mm of rain per year with rich but quite specific agricultural potential, ideal for viticulture. Fittingly, the earliest evidence for viticulture and viniculture comes from the Transcaucasus region, the homeland of ETC as we have seen (McGovern *et al.* 2003; Batiuk 2013: 459). The role of cuisine in defining and sustaining an ETC identity, whether founded in drinking wine or beer, underpins Wilkinson's (2014: 219) interpretation of ETC as "an alternative ritual economy" consciously focused on the house and home in opposition to the temple focus of the Uruk/Late Susa II world of Mesopotamia and Khuzestan.

An increase in sheep and goat, along with a decline in cattle and pig, is attested in the few cases where we have sufficient evidence of the pre-ETC-ETC transition, for example at Ghal-e Ben in Mazandaran and at the Upper Euphrates site of Arslantepe (Frangipane 2001: 4), which may be an indication of an increased emphasis on some form of herding mobility as an ETC economic strategy (Piro and Crabtree 2017; Palumbi 2019). Other evidence on this point is absent, sparse or unconvincing (Howell-Meurs 2001; Sagona and Zimansky 2009: 190–191; Sagona 2011: 692). More significantly, a key to the success of ETC communities as they spread across the upland zones of Southwest Asia is likely to have been their flexibility in diversifying their agro-pastoral strategies in order to suit the varying environmental contexts within which they settled. Within a broad spectrum of strategies, it seems clear that seasonal vertical and horizontal movements of elements of otherwise settled society with herds of sheep and goat formed one of the enduring options for ETC societies of the upland zones.

ETC ceramics – pots equalling people?

The appearance of black, red and dark grey incised handmade pottery and circular mudbrick structures at the onset of ETC occupation at sites in north-western Iran, as elsewhere in the ETC world, is highly suggestive of incursion by new peoples (Abay 2005). New ETC settlements in Iran are marked by dramatic changes in material

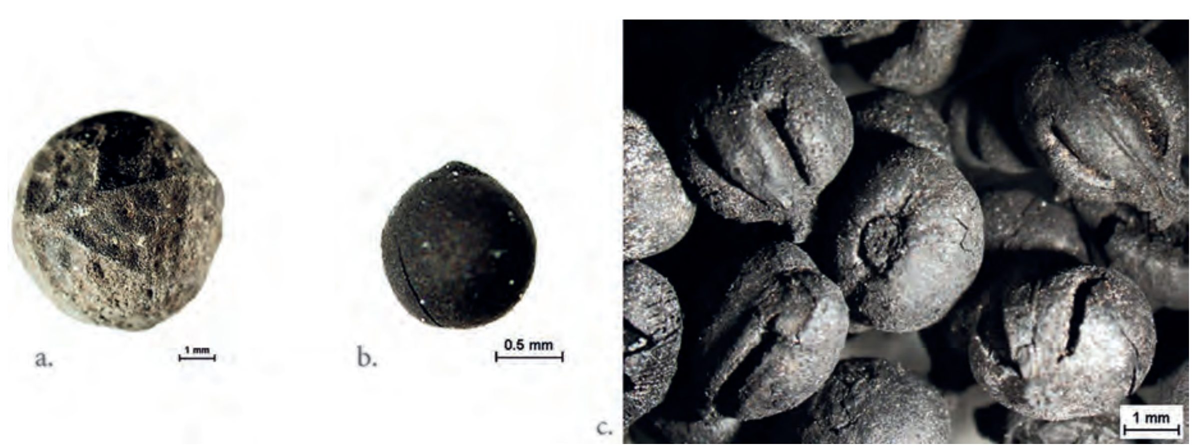

Figure 8.21 Kohneh Pasgah, charred fruits: hackberry, fig, grapevine (after Decaix *et al.* 2019b: Figure 8).

culture traditions, with little suggestion of local evolution of ceramic or other styles. As Mason and Cooper (1999: 28, 30) emphasise, ETC ceramics represent "a radical departure in ceramic technology" from preceding and succeeding practices of region, to the extent that "an equation between pots and people seems highly plausible." In the Urmia basin, the only hint at the existence of a local ceramic style possibly developing alongside ETC wares is provided by the poorly understood Painted Orange Ware and Hassan 'Ali Ware encountered in Hasanlu level VII, in excavations at Barveh Tepe in Sardasht (Sharifi 2020), and in surveys of the Urmia basin (Kroll 2004, 2005a; Summers 2013b: 167)

The problem of how to interpret the considerable homogeneity in ceramic styles across huge swathes of Early Bronze Age Southwest Asia has taxed archaeologists since the first discoveries of ETC pottery. In a review of ceramics from extreme ends of the ETC world, north-western Iran and the southern Levant, Ruth Amiran (1965: 165) set out what is still the most widely accepted view: "Diffusion of ceramic culture to such an extent requires the interpretation of an ethnic movement emanating from a region where that culture is at home, the Transcaucasian regions," even if most scholars might today question use of the word "ethnic" in that statement. Indeed there has been no serious challenge to the view that "The ETC expansion…was a migration of people" (Rothman 2011: 142; see also Kohl 2007: 97) or, better still, "rather than a single or a few large migrations, we are probably looking at many smaller movements outward and possibly even back over a long span of time" (Rothman 2011: 149; Marro 2011: 293). Batiuk's (2013: 452) meticulous analysis also interprets the ETC settlement data as indicating "multiple migrations – first, pastoralists and/or traders who made initial contact in the region, followed by farmers establishing themselves on the outskirts of an indigenous settlement system, drawn in or pushed by some social, political or economic need" and never fully integrated or assimilated into their new homelands. Palumbi and Chataigner (2014: 256; Palumbi 2019), by contrast, suggest that at least in the case of some sites and regions, including the Upper Euphrates at Arslantepe and the Kangavar valley at Godin Tepe, the transition from sophisticated, centrally organised Late Chalcolithic settlements with formal public architecture to ETC "squatter" occupation in wattle and daub huts may have been made by peoples indigenous to those sites, in particular by local pastoral communities who may have been "particularly receptive to the Kura-Araxes cultural system," a pattern of cultural adaptation that may have existed alongside ETC movement and migration. This specific pattern may be most relevant for ETC sites in the far northwest of Iran where there appears to be some continuity in ceramic technology and style from Late Chalcolithic into ETC (Abedi 2016b).

The possibility that ETC peoples might be ancestors of the historically attested Hurrians has been long considered (Burney 1997; Abdi 2012: 28). By the later third millennium BC we can identify a Hurrian presence at sites such as Tell Mozan, ancient Urkesh, through inscribed seal impressions bearing names of Hurrian kings, queens and court officials (Kelly-Buccellati 2004). Material correlates of this connection at Mozan/Urkesh are vividly present in the form of ETC andirons and a remarkably well-preserved decorated horseshoe-shaped hearth from an area of domestic housing dating to the early second millennium BC (Kelly-Buccellati 2004: 72–73). In any case, attempts to connect ETC material culture with discrete ethnicities (Burney 1989, 1994) lack conviction, except in the loosest possible sense, in the light of regional variability of ETC material traits and the manifold challenges in connecting material culture traits with ethnic identities, as further discussed in Chapters 11–12. Intriguingly, recent analysis of DNA from modern and ancient human populations of Iran suggests significant genetic input from the Caucasus and the Steppe into central Iranian populations "restricted to the Bronze Age or briefly before" (Mehrjoo *et al.* 2019), fitting perfectly with the onset of the ETC phenomenon in Iran. We should probably accept therefore that with regard to the ETC in Iran, at least, pots do equal people.

But it is important to appreciate that ETC ceramic repertoires were not restricted and static across time and space. As we have seen at Yanik Tepe, there were fundamental changes in the composition of ceramic assemblages from ETC IIA to ETC IIB (Summers 2013a: 67), and we can also see much variability in assemblages across space, as ETC communities clearly interacted with local pre-existing societies in the course of their expansion and developed their own regional traditions (Sagona and Zimansky 2009: 187), with much evidence for production of ceramics from local clays at multiple sites across the entire ETC zone (Kibaroğlu *et al.* 2011). Even in the ETC heartlands of the southern Caucasus, as well as in eastern Anatolia, there are distinctive regional design traditions (Rothman 2003a, 2011: 145). Regional variation is also evident in the ETC ceramics from north-western Iran, whereby so-called dimple and groove decoration is found at sites west of Lake Urmia, such as Geoy Tepe, Gijlar and Haftavan, but not at sites east of the lake, such as Yanik Tepe. By contrast, decoration by white-inlaid incision occurs east of the lake but not west of it (Rothman 2003a: 212, Figure 18.2a), all of which is suggestive of adaptability and interaction with the societies amongst whom ETC communities came to settle. One model for the movement of ETC ceramics has been suggested by Pierre de Miroschedji (2000: 264) in his study of Khirbet Kerak pottery in the southern Levant. He proposes that the migrations were spearheaded by specialist ETC potters producing aesthetically appealing "poterie exotique qui pouvait passer pour le symbole d'un statut social eminent." This model might account for the diffusion of some ETC vessels into the southern Levant, but it is hard to see how it applies to sites where ETC pottery is found throughout all domestic contexts with no apparent elite associations. Analysis of ETC ceramic fabrics in the central Zagros region in Iran, while showing common use of grog temper and basic hand-forming techniques, also reveals considerable diversity in fabric types that "can only be explained by diverse production probably at the household level" (Mason and Cooper 1999: 28; see also Kouhpar *et al.* 2017). Most scholars see evidence for significant migrations of people, not just pots and potters, into the Jordan valley as part of the ETC spread (Greenberg 2007).

The ETC expansion: one component of a mega-phenomenon?

What factors might have underlain the very broad expansion of the material attributes that characterise the ETC horizon? There is little question that ETC originates broadly in the upland regions of eastern Anatolia, Georgia, Azerbaijan, Armenia and, arguably, far northern Iran (Palumbi 2003; Smith 2012), and that therefore the movement is one from the north, both to the south and east into north-western and central-western Iran and to the south and west into eastern Anatolia and ultimately through the Levant. As Adam Smith (2012: 676) has stressed, the notion of cultural diffusion southwards from the Transcaucasus, with or without movements of peoples, challenges conventional interpretations "that privilege Syro-Mesopotamia as a generative location of cultural production." He relates how Andrew Sherratt (1997) strove to interpret the Kura-Araxes phenomenon as ultimately derived from Mesopotamian Uruk expansion, as with the earlier rich culture of Maikop in the north-western Caucasus (Lyonnet 2000; Kohl 2007: 72–86). On the contrary, as Smith (2012: 677) articulates, the ETC must be viewed as a locally situated Transcaucasian culture whose spread "effectively overturned Mesopotamian hegemony in parts of the northern Near East that had developed during the Late Uruk era."

Mitchell Rothman's (Rothman 2003b, 2011: 158) proposal that ETC communities were drawn southwards to newly developing markets and nodes of trade and exchange helps us to understand ETC attraction to the strategically located sites of Arslantepe on the Upper Euphrates and Tell Mozan/Urkesh in north-eastern Syria, but most of the movement of ETC communities seems to have been driven by desire for arable land and pasture for herded animals and possibly good soils for vines too (Kohl 2007: 90; Batiuk 2013), with little evidence of an ETC desire to control key trade routes such as the Great High Road. Research in the southern Caucasus has discovered large numbers of early agricultural settlements, numbering in the hundreds (Akhundov 2004: 424), so it is possible that simple pressures of expanding populations and increasing demand for land and pasture were the key drivers in stimulating ETC migration.

The timing and details of each step of the expansion need to be studied on their own terms using high-resolution locally situated evidence (Rothman 2003b, 2011: 156–160) but as yet we lack such evidence for most regions of the ETC world. A detailed study of ETC origins and spread, by Giulio Palumbi (2003), argues for the development of red-black burnished pottery in eastern Anatolia, a spread of this material eastwards to the Kura-Araxes valleys, a return to eastern Anatolia of rapidly developing early ETC communities, followed by a mixture of population movements and cultural assimilation in the diffusion of ETC societies more broadly across much of Southwest Asia. This theory has been challenged by more recent discoveries at Ovçular Tepesi in Nakhchivan, which suggest a local development of ETC traits amongst Late Chalcolithic societies of the southern Caucasus (Marro 2011: 291–292; Palumbi and Chataigner 2014).

The earliest ETC presence in Iran occurs at Kohneh Pasgah, Kul Tepe and neighbouring sites of the northern extremity of Iran, close to the Araxes river, and datable to the later fourth millennium BC. This region of Iran clearly plays an integral part in a regionally autochthonous development of ETC within the southern Caucasus. The subsequent spread of ETC into the rest of north-western Iran takes place from about 3100 BC (Summers 2013b: 170), and thus broadly coincides with several other significant transregional socio-cultural phenomena of ancient Southwest Asia (Figure 7.1): the collapse of Late Uruk/Late Susa II influence at the end of the Late Chalcolithic; the succeeding Jemdet Nasr and Early Dynastic I periods in Lower and east-central Mesopotamia; the Scarlet Ware ceramic horizon of western Iran and east-central Mesopotamia; the early stages of the Proto-Elamite horizon in south-western and north-central Iran; and the early phases of the Ninevite 5 cultural phenomenon in Upper Mesopotamia which, like early ETC and Proto-Elamite (to a lesser extent), involves a resurgence of high-investment, decorated ceramics (painted, incised, excised; Roaf and Killick 1987), and major shifts from preceding traditions in architectural traditions and settlement patterns. A further component on this broad canvas may be mid-fourth millennium BC movements of new groups of peoples from the steppe regions north and east of the Caspian Sea, travelling with their four-wheeled, oxen-drawn carts southwards into the Transcaucasus and thereby displacing local Kura-Araxes/ETC I populations, who move southwards into Anatolia and Iran in several streams (Kohl 2007: 96).

In this light, any attempt to explain the ETC phenomenon may best address all these components in a single integrated essay (Kohl 2009; Wilkinson 2014; Palumbi 2019). One key issue within such an essay centres on the need to establish whether the incursion of ETC peoples into north-western Iran, and other regions of Southwest Asia, was a cause or a consequence of any of the other transregional phenomena of the time. The current chronological data are too parlous for a convincing attempt at an answer (Di Nocera 2000: 79; Marro 2007: 93), but provisionally it seems that the Late Uruk/Late Susa II phenomenon came to an end at some point prior to significant ETC spread beyond its homelands. Thus, Potts (2013b: 206) argues for a hiatus "likely to have been at least a century" between the abandonment of Godin VI:1 and the start of Godin IV. If this break applies more broadly, we may at least regard the ETC movements as essentially filling a population vacuum that undoubtedly existed across large swathes of Southwest Asia and Iran by the early third millennium BC (Smith 2012: 678; Thornton 2012: 596), however that vacuum might have come about. Others, however, have argued that the collapse of the Late Uruk/Late Susa II world was directly caused by violent incursion from the north by ETC peoples, which in turn encouraged Lower Mesopotamian elites and their traders to shift their connections away from the highland zone southwards to the Persian Gulf, in order to secure access to the metals and other commodities which they so cherished (T. Potts 1994: 81–82; Kavtaradze 2004; Summers 2014). Whether or not a direct cause of Late Uruk/Late Susa II collapse, the presence of new peoples at key trade nodes, such as at Godin Tepe on the Great High Road (Weiss and Young 1975: 15) and Arslantepe in the Euphrates valley, certainly stimulated a major reorientation in interregional interconnections from *c.* 3000 BC, even if it seems that ETC communities failed to, or chose not to, take advantage of access to those routeways for their own trading purposes.

What might have been the significance of climate and environment in the later fourth and through the third millennia BC as possible stimuli to large-scale population movements from the Caucasus southwards? Analyses of pollen sequences in cores from Lakes Imera and Aligol west of Tbilisi in southern Georgia (Figure 8.22) (Connor and Sagona 2007) have outlined some suggestive initial answers to this question. Firstly, palaeoclimate records across this region demonstrate that the period 4000–2000 BC was a climatic optimum, with increased temperatures and precipitation (Roberts and Wright 1993; Connor and Kvavadze 2014). As Connor and Sagona (2007: 30) point out, increased precipitation (as snowmelt and spring rains) may have made lowland floodplains too wet for arable farming, while higher summer temperatures will have increased the risk of drought and crop failure. A visible transition in Late Chalcolithic settlement of the Caucasus region from lowlands towards upland plains and pastures (Edens 1995: 55) was one response to these risks, with the adoption of a flexible, mixed economy of upland agriculture with increased emphasis on animal herding and perhaps viticulture. Overflowing of major rivers such as the Araxes, as historically attested (Maziar 2010: 175), may have significantly impacted on settlements along the low-lying riverbanks at this time, leading to episodic abandonments and relocations.

Secondly, from 4000 BC onwards the climatic optimum in the southern Caucasus enabled the spread of oak-dominated forests across regions that had earlier been too dry and cold for tree spread, with potentially disastrous results for farming communities of the region: "For agriculturalists reliant upon domestic livestock and crops, the disappearance of formerly arable land beneath a forest canopy would have led to economic difficulties, particularly for light-demanding grain crops" (Connor and Sagona 2007: 30–31; Connor and Kvavadze 2014). In

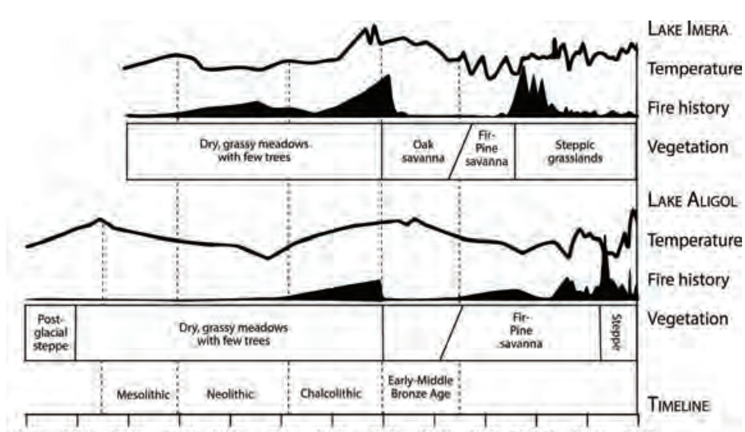

Figure 8.22 Palaeo-environmental change according to cores from lakes Imera and Aligol, southern Georgia (after Connor and Sagona 2007: Figure 5).

the cores from both Lakes Imera and Aligol, there is clear charcoal evidence for a massive increase in fires in the period 4000–3000 BC (Connor and Sagona 2007: Figures 3–5), interpreted as resulting from human attempts to stem the spread of woodland vegetation onto previously arable land. From *c.* 3000 BC the Imera and Aligol records demonstrate that the battle had been won not by people but by trees, with the environment characterised by oak-dominated savannas, and a lack of lake core charcoal from 3000 BC suggesting that people had surrendered in their attempts to wrest their fields back from the forest. Wild fauna such as bear and red deer in assemblages from east Anatolian ETC sites shows that much of the Upper Euphrates region was also heavily forested through the fourth and third millennia BC (Marro 2011: 302).

These intriguing environmental indicators, which surely need support from further climate proxy records of the region and beyond, suggest that Late Chalcolithic and early ETC societies of the southern Caucasus responded to major changes in environmental conditions through the climatic optimum of the fourth and third millennia BC both by physically moving to higher localities, where they developed an increasingly flexible mix of farming and herding practices, and by attempting to stall the spread of trees through large-scale targeted use of fire. From 3000 BC, the indications are that both of these responses had failed to cope in supporting the agricultural populations that the region had previously been capable of sustaining, and that therefore the attractions in moving to pastures new, literally, were irresistible. It cannot be coincidence that it is at this point in time that we see the first major spreads of ETC communities southwards into south-eastern Anatolia and north-western Iran. The fact that many of the ETC foundations within the newly settled areas, such as the Qazvin plain, are founded not on the plains themselves but in adjacent highland zones, may indicate that the incomers preferred to maintain their mixed upland farming/herding strategies that they had employed in their adaptations in the Caucasus to environmental changes there from *c.* 4000 BC.

As Catherine Marro (2011: 294) has stressed, ETC expansion settlements are located in a great arc of highland territory from the Caucasus and north-western Iran across eastern Anatolia and into the Levant, and within this arc there is no evidence for ETC settlements on the low-lying plains and steppes of Upper Mesopotamia and Syria. We might then usefully consider the ETC phenomenon within the context of niche construction theory (Smith 2016; Zeder 2016), whereby human communities, deliberately or otherwise, shape particular ecological niches to their own purposes while adapting their socio-economic behaviours and practices to suit. In the case of ETC, the constructed niche was that of mixed herding and arable farming on light upland soils, possibly including viticulture, a niche that may have been to some extent forced on them by the changing climatic conditions discussed above. Once developed within the context of the later fourth millennium BC Caucasus, the cultural practices and associated material culture attributes attendant upon interaction with this specific niche proved to be so successful that they were fully portable to vast swathes of hitherto under-exploited upland territories across much of Southwest Asia.

The collapse of ETC as a detectable archaeological phenomenon in Iran occurred by the mid-third millennium BC, as in neighbouring south Caucasus (Smith 2012: 679; Palumbi and Chataigner 2014: 257). Radiocarbon dates from Nadir Tepe and Ghal-e Ben in Mazandaran suggest an end to ETC occupation at these sites by around 2400 BC succeeded, after a short hiatus, by settlers with new ceramic styles including grey and red wares indicating widespread contacts across the Alborz mountains and into Central Asia (Heydari *et al.* 2018). The outer reaches of the ETC world collapsed significantly earlier, at *c.* 2700 BC at Godin Tepe for example (Potts 2013b: 206–207). Across the ETC world we see a dramatic shift in settlement patterns with a significant episode of regional abandonment before resettlement, generally at a more modest scale. To what extent this disruption in settlement patterns in the mid-late third millennium BC can be associated with wider trends of climatic adversity, including the so-called "4.2kya Abrupt Climate Change event," claimed as a global phenomenon (Staubwasser and Weiss 2006), is at present impossible to say, but it appears that the significant abandonments of ETC sites at least across north-western and western Iran had occurred well before the 4.2 kya event and therefore cannot be directly connected to it.

North-western Iran in the Middle-Late Bronze Age, 2100–1250 BC

As discussed above, the end of the ETC in north-western Iran is shrouded in obscurity, with little support from radiocarbon dating and considerable uncertainty over the applicability of excavated sequences, as at Yanik Tepe and Haftavan for example, to the broader region. Danti's (2013a: Figure 2.2, 2013b: table 17.1) revised chronology for the region puts the start of the Middle Bronze Age at 2100 BC (Table 8.2), with the appearance of Simple Ware and Painted Ware at Hasanlu VIc, Dinkha V, Geoy Tepe G and Bastam (Kroll 2018). Between the end of ETC and the start of the Middle Bronze Age (MBA) in north-western Iran, we therefore have perhaps several centuries of occupation (or not) of this region where our knowledge is limited to ceramic assemblages such as Painted Orange Ware recovered largely from surveys (Kroll 2005a; Danti 2013a: 13; Summers 2013b; Helwing

Table 8.2 Periodisation of north-western Iran 2100–300 BC (after Danti 2013b: table 17.1)

Dates cal BC	*Period*	*Ceramic horizon*	*Hasanlu*	*Dinkha*	*Geoy*	*Kordlar*	*Haftavan*
550–300	Achaemenid Iron IV	Classic Triangle Ware	IIIa/II	–	–	–	–
800–550	Iron III Iron III (Urartian)	Late Buff Ware/Ziwiyeh Ware Late Buff Ware/Urartian	IIIb IIIc	– –	– –	– –	– III
1050–800	Iron II	Late MBW	IVb	II	Geoy A	IIb–I	IV
1250–1050	Iron I	Middle MBW/Painted Ware (North)	IVc	Late III	Geoy B	IV/III–IIb	?
1450–1250	Later Late Bronze Early Late Bronze	Early MBW/Painted Ware (North) Early MBW/Painted Wares (North)	Late V Early V	III III	Geoy B Tomb K	IV V?	? V
1600–1450	Middle Bronze III	Early MBW/Polychrome Painted Wares	VIa	Early III	Late D–C	V?	Late VIb
1700–1600	Terminal Middle Bronze II	Painted Wares/Early MBW?	VIb	IV Phase D	Geoy D	–	Early VIb
1900–1700	Middle Bronze II	Painted Wares	VIb	IV Phases A–C	Geoy D	–	Early VIb
2100–1900	Middle Bronze I	Simple Ware/Painted Ware (North)	VIc	V	Geoy G	–	VIc

2017a). Middle Bronze I ceramics of the region show good connections with assemblages of Upper Mesopotamia in the later third and early second millennia BC, a trend that reaches its apogee in Middle Bronze II, 1900–1600 BC, with the widespread occurrence of Upper Mesopotamian Khabur Ware at the key sites of Hasanlu period VIb, Dinkha period IV and Khanghah Gilavan cemetery (Hamlin 1974a; Henrickson 2011a; Rezaloo and Khanali 2017). Piller (2003–2004, 2004) suggests that the origins of the Iranian grey wares, so typical of the Iron Age (Chapter 11), may be sought in the Middle Bronze Age ceramic traditions of northern Iran.

Danti (2013a: 13, 147) speculates that these major sites of Middle Bronze Age north-western Iran may have participated in the extensive trading networks of the Old Assyrian period, centred on Assur on the Iraqi Tigris and characterised by *kārum* trading colonies as attested at this time in Anatolia, although none of the typical Old Assyrian texts have been found at Hasanlu and Dinkha. We may therefore wonder about the possible role of Hasanlu and Dinkha in the collecting and transshipment westwards of the tin and lapis lazuli that feature prominently in the Old Assyrian trade as a commodity transported from the east through Assyria and into Anatolia, along with textiles, in exchange for Anatolian gold and silver. The sources of the traded tin have been a topic of speculation for a long time (Pigott 2021), with mines in north-eastern Afghanistan and Uzbekistan previously seen as the likeliest candidates (Veenhof 2008: 82), although mines east of Tabriz in the Urmia basin, not far from Hasanlu and Dinkha, have also been proposed (Larsen 1967: 4). There is also the possibility that tin was mined from sources proximate to Mundigak in Afghanistan with westwards transport either by sea along the Persian Gulf (Weeks 2004) or through southern Iran and Susa into Mesopotamia (Kaniuth 2007: 34). Tin sources at Deh Hosein in eastern Luristan may also have been sourced at this time (Nezafati *et al.* 2009). Whatever the source, it is possible that tin and lapis lazuli reached Assur by at least two highland-lowland routes, a southern route via Susa, Der and Eshnunna to Assur (Dercksen 2005), and a northern route across northern and north-western Iran passing by Hasanlu and Dinkha and connecting directly to Upper Mesopotamia through the natural passes at Kel-i Shin and Khaneh to the Rowanduz gorge and the Upper Zab headwaters (Danti 2013b: 329). This latter route would accede considerable importance to Hasanlu and Dinkha as nodes of control along the trading network.

Further eastwards in northern Iran in Gilan, no sites of Middle Bronze Age date have been located (Piller 2012c: 123), an absence of evidence that chimes with the picture across all of eastern Iran through much of the second millennium BC, almost certainly due to the onset of a major episode of climatic aridification (Sharifi *et al.* 2015). It is striking that north-western Iran is the only region of Iran where human societies appear to thrive through the centuries of the Middle-Late Bronze Age and into the Early Iron Age, indicative both of a favourable environment especially in terms of reliable water supply and of impressive societal adaptability. Episodes of disruption in north-western Iran are attested, however, by repeated destructions by fire in the Middle Bronze II-III levels at **Haftavan** (Edwards 1983), succeeded by levels with pits and stake-hole constructions, and destruction of the final Middle Bronze II level at Dinkha, ending the Khabur Ware Mesopotamian connections before 1600 BC (Danti 2013a: 15). At about the same time, the Old Assyrian trading colonies across central Anatolia are terminated, also through destruction by fire (Veenhof 2008: 143), suggestive of a transregional episode of violent disruption across the upland zones in the mid-second millennium BC, plausibly stimulated by fierce competition over resources during the millennium-long phase of climatic adversity affecting much of the region.

Through the course of the Late Bronze Age (LBA), *c.* 1450–1250 BC, levels of social and economic complexity steadily revive across north-western Iran, as attested at Hasanlu V, Dinkha III, Haftavan VI (Burney 1973), Kordlar IV, Zardkhaneh (Kazempour *et al.* 2017) and Khanghah Gilavan (Rezaloo and Khanali 2017), although none of these settlements can be considered full-blown urban centres, and the material culture, above all ceramics, suggests a high degree of regionalisation within north-western Iran (Guarducci 2019: 111–115). Common ceramic types include what Danti (2013b) calls Early Monochrome Burnished Ware, a more specific term for what others have loosely classed as Grey Ware, which has been too readily associated with the so-called "Indo-Iranian migrations" of the late second-early first millennia BC (Chapter 11). A chance find of copper-bronze weapons from a grave at Bit-Sorgh near Kermanshah shows good parallels with Hasanlu V materials (Dyson 1964). At **Hasanlu** in the later LBA a small columned-hall building was constructed (Figure 8.23) (Danti 2013b: Figure 17.6) with a central raised hearth, a "throne seat" and internal benches along the wall faces. This and other LBA buildings were likely enclosed within a fortified and gated citadel on the High Mound at Hasanlu, while **Kordlar** level IV comprises a fortified manor house with towers and a columned hall, destroyed by fire probably in the Early Iron Age (Lippert 1979; Danti 2013b: 337). The site of **Zardkhaneh** covers some 30 ha in the Late Bronze Age-Early Iron Age, including a central citadel, manor house, craft-working areas and a necropolis with burials in the mounded kurgan style (see Chapter 11; Kazempour *et al.* 2017). The widespread use of fortifications suggests ongoing insecurity across the region in the LBA.

Human burial practices at Hasanlu show a transition from multiple diverse modes of burial of the dead in the MBA - including multiple burials, single pit inhumations, stone-built tombs and pithos burials – to an almost exclusive use of single pit inhumations in extramural cemeteries in the LBA (Danti 2013b: 339–340). At both Hasanlu and Dinkha, LBA cemeteries comprise largely pit burials with varied body orientations, traces of reed mats underlying skeletons and the dead being accompanied by drinking and eating vessels and sheep/goat bones indicating the provision of a final meal for their journey into the next world. Metal objects and jewellery were also occasionally buried with the dead.

An extraordinary tomb of LBA date has been excavated at **Bayazid Abad**, just 18 km southwest of Hasanlu (Amelirad and Khanmohamadi 2016). A stone-lined chamber (Figure 8.24) contained the remains of 15 individuals, adult and child, with heads to the north. Some 500 ceramic vessels, 2000 bronze and iron objects, numerous beads of diverse materials, plus 55 cylinder seals in basic Mitanni style were deposited in this tomb (Figure 8.25), indicative of strong Upper Mesopotamian connections. A massive multi-period cemetery, spanning up to 300 ha, has been excavated at **Khanghah Gilavan** in Ardabil province, 60 km southeast of Khalkhal (Rezalou and Ayremlou 2016; Rezaloo and Khanali 2017), with burials spanning Middle Bronze Age (Figure 8.26) to Parthian in date including some graves with burial customs comparable to those of the kurgan tradition to the north.

These Middle-Late Bronze Age developments in north-western Iran laid the foundations for the elaboration of sites like Hasanlu, Zardkhaneh and Kordlar in the following Early Iron Age (Chapter 11). As Danti (2013a: 22) puts it "The archaeological culture of Hasanlu IVb has its roots in the mid-2nd millennium, arriving not through punctuated culture change or wave migration, but rather through a gradual development rooted in indigenous traditions."

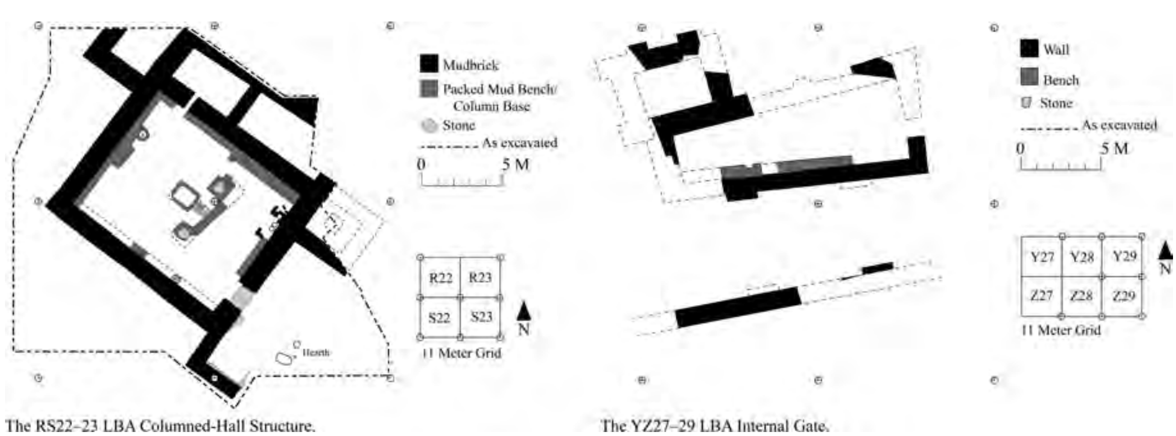

Figure 8.23 Hasanlu, level V columned-hall building and internal gate (Danti 2013b: Figure 17.6) (image courtesy of Michael Danti).

Figure 8.24 Bayazid Abad, stone-lined tomb (Amelirad and Khanmohamadi 2016: Figure 2) (photo credit: Sheler Amelirad).

Figure 8.25 Bayazid Abad, selected cylinder seals from tomb (Amelirad and Khanmohamadi 2016: figs 1–8) (images courtesy of Sheler Amelirad).

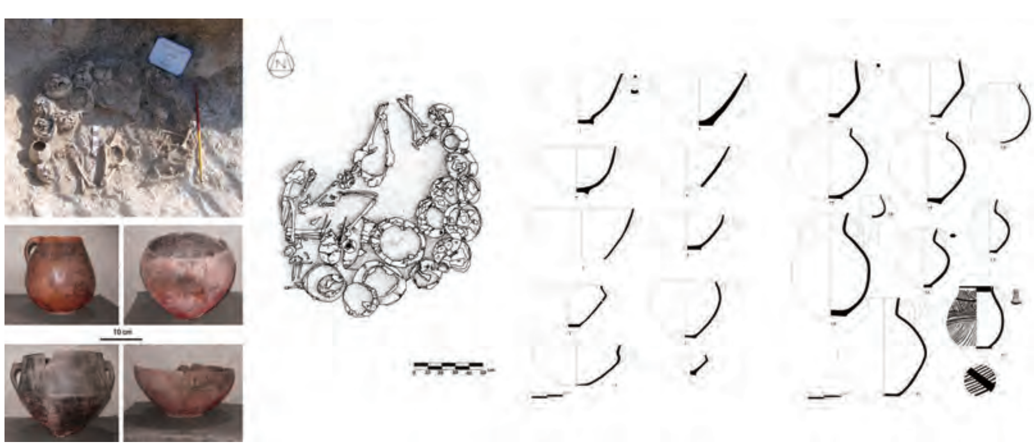

Figure 8.26 Khanghah Gilavan, Middle Bronze Age grave and grave goods (Rezalou and Ayremlou 2016: figs 9–12) (images courtesy of Reza Rezalou).

The central plateau of Iran, 3000–1250 BC

As discussed in Chapter 6, the human settlement of north-central Iran, including the plains of Qazvin, Tehran and Kashan, underwent a significant reduction in scale and intensity from *c.* 3400 BC and across much of the third millennium BC, for reasons not yet fully understood (Vidale *et al.* 2018). During the second millennium BC human occupation of the central plateau of Iran to some extent revived from this significant episode of abandonment or retrenchment, although the picture is still far from clear (Fazeli Nashli and Abbasnegad Seresty 2005; Fazeli Nashli and Nokandeh 2019).

There is convincing evidence for resettlement from the early second millennium BC across the plains of north-central Iran (Figure 8.1) (Pollard *et al.* 2012, 2013). Grey ware and painted ceramics of Bronze Age and Early Iron Age date, including the so-called "Urmia Style," occur widely at sites such as Qoli Darvish, Tepe Shizar and Sagzabad (Azizi Kharanaghi *et al.* 2010; Velayati *et al.* 2017; Sarlak and Hessari 2018), and at Pardis on the Tehran plain (Chapter 11; Fazeli *et al.* 2007). As with north-western Iran, there is evidence for a degree of cultural continuity spanning the Late Bronze Age to Early Iron Age in these regions of north-central Iran (Fazeli Nashli and Nokandeh 2019). A key site is **Qoli Darvish**, located close to Qom city. Excavations by Siamak Sarlak since 2002 at this site have investigated occupation dating from the late fourth millennium BC onwards, including Proto-Elamite (Chapter 7) and ETC (see above) levels separated by a hiatus (Sarlak 2011; Alizadeh *et al.* 2013b). Alongside the ETC materials, there is evidence for the flourishing of local ceramic traditions at Qoli Darvish in the mid-third millennium BC. The Qom plain hosts increased levels of settlement through the Middle and Late Bronze Ages, with a wide range of transregional connections, including with Central Asia, attested in the ceramic assemblages of Qoli Darvish and other surveyed sites (Sarlak and Hessari 2018). The Iron Age arguably begins as early as 1500–1400 BC in this region, according to the presence of iron objects and the increasing preponderance of grey wares at Qoli Darvish (Chapter 11).

On the Kashan plain, following the collapse of Sialk IV in the late fourth millennium BC, there is little evidence for occupation until the mid-second millennium BC (Fazeli Nashli and Nokandeh 2019). Investigations in the hilly flanks of the Kashan plain have detected cemetery sites of Bronze Age and Early Iron Age date, and excavations at **Estark-Joshaqan** show a rich range of burial practices, including multiple inhumations, and deposits of grave goods through much of the second millennium BC (Sołtysiak *et al.* 2016a; Hosseinzadeh *et al.* 2019).

Along the southern edges of the central plateau, significant numbers of Bronze Age sites dating from *c.* 2800 BC onwards according to ceramic finds have been located in surveys of the Gavkhuni wetlands and surrounding plains lying southeast of Esfahan city (Esmaili Jaludar 2016; Shojaee Esfahani and Rafi'i Alavi 2018). Surveyed Bronze Age sites range in size from small villages to sizeable urban-scale settlements, all of which must have depended on water supplied by the Zayandehrud river and associated lakes that have subsequently dried up. Brief excavations at **Tepe Kopandeh** in this region revealed a rich sequence of occupation spanning a millennium from 2500 BC, showing strong connections with the Zagros, Khuzestan and Fars regions, while a human burial recovered during excavations at the previously looted Site 051 of the **Kafarved-Varzaneh** survey yielded grave goods of silver, gold, alabaster, carnelian and ceramics dated to *c.* 2500 BC (Figures 8.27–8.28) (Ilkhan *et al.* 2019).

In sum, we have much still to learn about the dynamics of Bronze Age human settlement and society across the plains and hilly flanks of the central plateau of Iran. Recent and ongoing research at least enables us to recognise

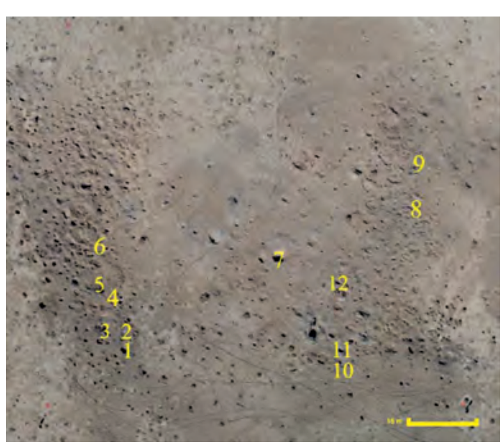

Figure 8.27 Kafarved-Varzaneh, looting pits at cemetery Site 051 (Ilkhan *et al.* 2019: Figure 2) (image courtesy of Ilkhan Tabasom).

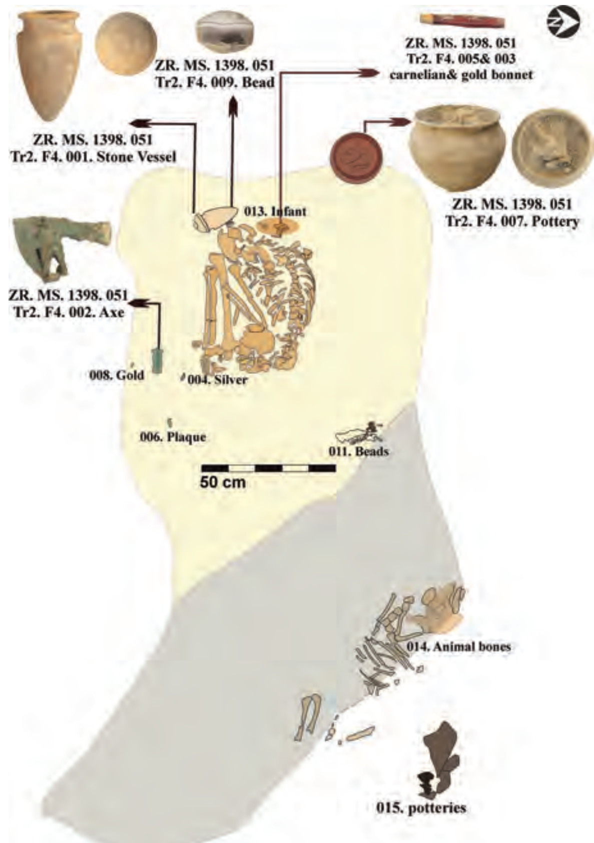

Figure 8.28 Kafarved-Varzaneh, excavated burial at cemetery Site 051 (Ilkhan *et al.* 2019: figs 4–5) (image courtesy of Ilkhan Tabasom).

significant evidence for cultural continuity spanning the Bronze Age-Iron Age transition, with the widespread development and adoption of grey ware ceramic traditions seamlessly persisting throughout the second millennium BC. We can also highlight the evidence for transregional connections, including for Central Asian impacts on ceramic styles during the second millennium BC (Fazeli Nashli and Nokandeh 2019).

Luristan and the burial of the dead, 3000–1200 BC

No traces of an ETC presence have been detected in the regions of Iran to the south and west of Kermanshah city, that is in the modern provinces of western Kermanshah and all of Ilam and Luristan (Figure 8.1). This region of the south-central Zagros also appears to have been beyond the Proto-Elamite sphere of influence, as we saw in Chapter 7. What, then, are the archaeological features of Luristan and adjacent regions during the Early Bronze Age and how can we approach and investigate the human communities of this area? How were the peoples of this region affected by the proximity of the massive socio-political entities of the ETC and the Proto-Elamite horizon, not to mention the burgeoning powers of Sumerian city-states directly to the west and southwest? Let us examine the evidence.

Defining Luristan

For archaeological purposes, Luristan is here defined as the region bounded to the north by Kermanshah, to the east by Malayer, Borujird and the Dez river, to the south by the Deh Luran plain and Khuzestan and to the west by Mandali, Mehran and the modern border between Iran and Iraq (Figure 8.29) (Edmonds 1922; Harrison 1942, 1946; I. Mortensen 1993; Hole 2007: 65–69; Potts 2013b: 203), comprising the modern provinces of both Luristan and Ilam (Overlaet 2013: 377). The major geographical features of ancient Luristan are the northwest-southeast trending spines of the Zagros Mountains, including the zones known as the Pish-e Kuh ("before the mountain"

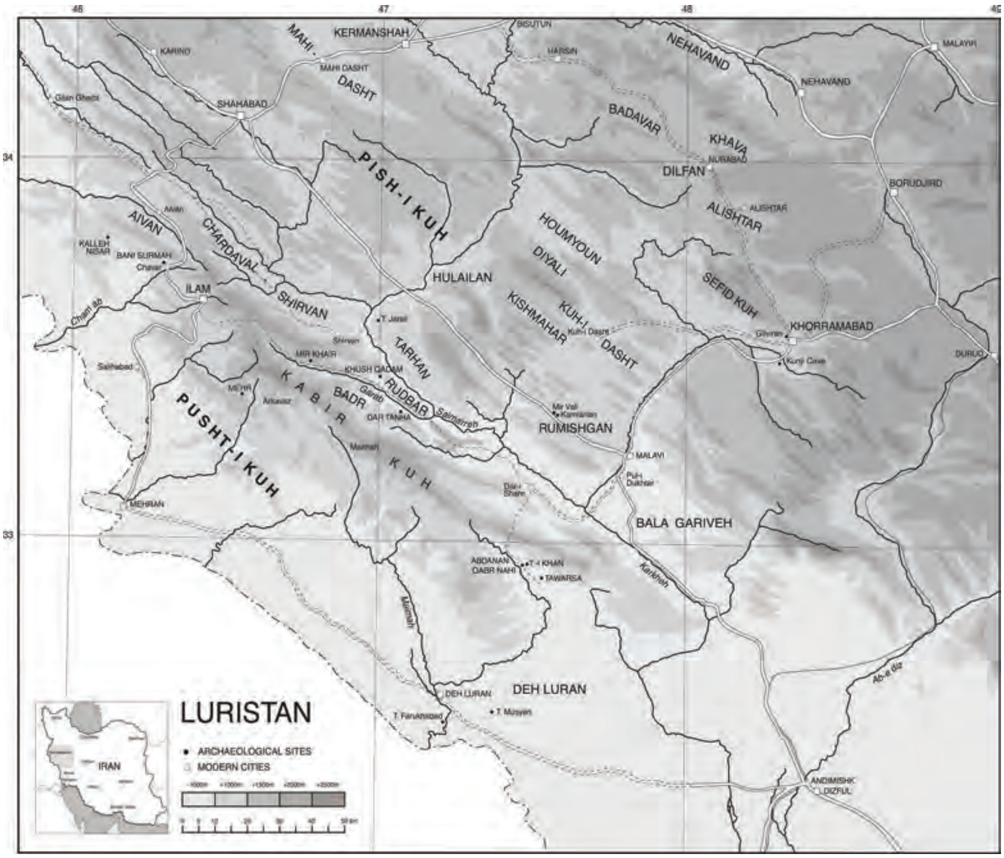

Figure 8.29 Map of Luristan and adjacent regions, showing key sites and features (Haerinck 2011: pl. 1) (image courtesy of Bruno Overlaet).

Figure 8.30 High peaks in Luristan (image courtesy of Bruno Overlaet).

as viewed from the Iranian plateau) and the Pusht-e Kuh ("behind the mountain"), the "mountain" in question here being the Kuh-e Kabir, the westernmost of Luristan's Zagros high ranges (Overlaet 2013: 377–379). Because of greater proximity to Mesopotamia, societies and material culture of the Pusht-e Kuh show stronger western connections than those of the Pish-e Kuh. High peaks in Luristan hover around the 2,800 m mark (Figure 8.30), while the high plains are at 1,200 m and more. A major topographic feature of Luristan, stretching from Kermanshah to Khorramabad, is the Kuh-e Sefid ridge that separates the *sardsir*, the cool, high summer pastures of the northeast, from the *garmsir*, or warmer, lower winter pastures of the southwest.

Figure 8.31 Saimarreh river, Luristan (image courtesy of Bruno Overlaet).

The Saimarreh river (Figure 8.31) is the major drainage feature of Luristan as well as forming a natural route-way from Khuzestan into the highland zone, connecting the Karkheh river to the south with the Gamas Ab and Qara Su to the north in one fluid system. Luristan thus includes both fertile plains and high pastures, ideal for the vertical transhumance that is such a feature of historical and modern occupation of the region (I. Mortensen 1993), as well as much bleaker terrain: "Hot in summer, cold and draughty in winter, all of it rugged and bare,... emphatically desolate" (Naval Intelligence Division 1945: 64). In like vein, Hole (2007: 66) describes Luristan as "a rugged and perversely difficult landscape to penetrate, marked by a series of anticlinal mountain ridges breached by few easy passes."

Archaeological research in Luristan

Following initial exploration of Luristan by Henry Rawlinson in 1836 (Rawlinson 1839), archaeological work in Luristan continued with Jacques de Morgan's two-year exploration of Luristan and Kurdistan in the late nineteenth century (de Morgan 1896; I. Mortensen 1993; Haerinck 2011; Potts 2013b). At the fringes of Luristan on the Deh Luran plain, early French excavations at Tappe Aliabad and Musiyan uncovered vaulted tombs with painted vessels in distinctive styles (Gautier and Lampre 1905; Helwing and Neumann 2014). In 1928 Ernst Herzfeld excavated a Bronze Age tomb near Gilviran (Herzfeld 1929–30b; Calmeyer 1971). Shortly afterwards the first so-called "Luristan bronzes' started to appear on antiquities markets in Kermanshah and Baghdad and were rapidly acquired by museums in Europe and the United States (Muscarella 1988, 1989, 2012b). In search of a provenance for these bronzes, Freya Stark visited Luristan in 1931 (Stark 1932). Further investigations in Luristan include the 1931–1933 French excavations at the important mounds of Tepe Giyan and Tepe Jamshidi, near Nehavand (Contenau and Ghirshman 1935), Aurel Stein's 1936 survey of parts of Luristan (Stein 1938, 1940), and Erich Schmidt's 1934–1935 and 1938 Holmes Expeditions to Luristan, which included surveys and excavations at several Bronze Age sites (Schmidt *et al.* 1989).

With the development of Iranian archaeology in the decades from 1950 onwards (Chapter 3), modern archaeological projects started to take place in Luristan. Such projects included the 1960s–1970s surveys in Hulailan and other valleys and the 1962–1964 excavations at Tepe Guran conducted by the Danish National Museum (Meldgaard *et al.* 1963; Mortensen 1963, 1975a; Thrane 1964, 2001), Frank Hole's surveys of the Khorramabad valley in 1963–1965 (Hole 2007), Clare Goff's surveys in the Pish-e Kuh and excavations at Baba Jan (Goff Meade 1968; Goff 1971, 1976) and, most significantly, the Belgian Archaeological Mission to Iran's investigations in 1965–1979 of multiple regions and sites of Luristan (Vanden Berghe 1968, 1970a, 1970b, 1973a, 1973b, 1979a, 1979b; Vanden Berghe and Haerinck 1984; Haerinck 1987, 2008, 2011; Vanden Berghe and Tourovets 1992; Haerinck and Overlaet 2002, 2004a, 2006a, 2006b, 2008, 2010a). Iranian excavations have taken place at Tepe Nurabad, again at Tepe Giyan (Azarnoush and Helwing 2005: 231, fn 190) and at Deh Dumen in Boyer-Ahmad province to the southeast (Naseri 2019). Beyond survey and excavation, archaeo-metallurgical research on Luristan materials and artefacts has begun to enhance our understanding of the movement and working of metals in the Bronze Age of the region and beyond (Begemann *et al.* 2008; Nezafati *et al.* 2009), including the proposal that a major source of copper for Mesopotamia in the Early Dynastic III period was Gujarat/Southern Rajasthan (Begemann and

Schmitt-Strecker 2009). Ongoing analysis of ceramics has started to articulate the complexities of regional and chronological variation in pottery styles including the many painted wares of the early-mid third millennium BC (Del Bravo 2014; Helwing and Neumann 2014).

Luristan chronology

The Bronze Age chronology of Luristan (Potts 2013b: 206) broadly comprises the Early Bronze Age (*c.* 3100–1900 BC), the Middle Bronze Age (*c.* 1900–1600 BC) and the Late Bronze Age (*c.* 1600–1200 BC). Haerinck and Overlaet's (2002, 2004a, 2006b, 2008, 2010a, 2010b; Overlaet 2006a, 2006b) detailed research in western Luristan have further defined four distinct phases within the Early Bronze Age: EBA I (*c.* 3100–2900 BC), EBA II (*c.* 2900–2600 BC), EBA III (*c.* 2600–2300 BC) and EBA IV (*c.* 2300–1900 BC). Table 8.3 shows approximate correlations between Luristan and Lower Mesopotamian chronologies, as well as the Godin Tepe phase scheme (see Potts 2013b: 206).

Luristan in Early Bronze Age I

Evidence for late fourth-early third millennia BC settlement in Luristan is virtually non-existent. The poorly excavated site of Tepe Giyan (Figure 8.32) seems to have been abandoned between level VD of Late Chalcolithic date and level V of mid-third millennium BC date (Negahban 2001; Potts 2013b: 207). As we saw above, Godin Tepe appears to have been deserted for a century or more of the mid-third millennium BC prior to the start of level III:6 occupation (Potts 2013b: 206–7; see below). Our evidence for human presence in Luristan for the period 3000–2600 BC comes almost exclusively from burials, a feature whose implications we will discuss below.

As to the cemeteries of this phase in Luristan, major sites include **Andjireh** in southern Ilam and **Mir Khair** near Badreh in the Saimarreh river valley (Vanden Berghe 1979b; Haerinck 2011: 67). Most of the 64 excavated graves at Mir Khair were individual subterranean cist tombs with gable or capstone roofs (Figure 8.33). The graves contained painted ceramics of so-called Transitional Polychrome type (Del Bravo 2014; Helwing and

Table 8.3 Approximate correlations between Luristan, Godin Tepe and Lower Mesopotamian chronologies (after Haernick 2011; Henrickson 2011b: 210; Potts 2013b: 206; Renette 2015: Figure 5)

Dates cal BC	*Luristan period*	*Godin period*	*Lower Mesopotamia period*
1600–1300	Late Bronze Age	post-III:2-III:1	Kassite
1900–1600	Middle Bronze Age	III:3–III:2	later Isin-Larsa/Old Babylonian
2300–1900	Early Bronze Age IV	III:5–III:4	later Akkadian/Gutian/Ur III/early Isin-Larsa
2450–2300	Early Bronze Age III	III:5	Early Dynastic IIIB/early Akkadian
2750–2450	Early Bronze Age II-III	III:6	Early Dynastic II–IIIA
2800–2750	Early Bronze Age II	hiatus	Early Dynastic I–II
2900–2800	Early Bronze Age II	IV	Early Dynastic I
3100–2900	Early Bronze Age I	VI:1 and hiatus	Jemdet Nasr/early Early Dynastic I

Figure 8.32 Tepe Giyan, view of mound (photo credit: Roger Matthews).

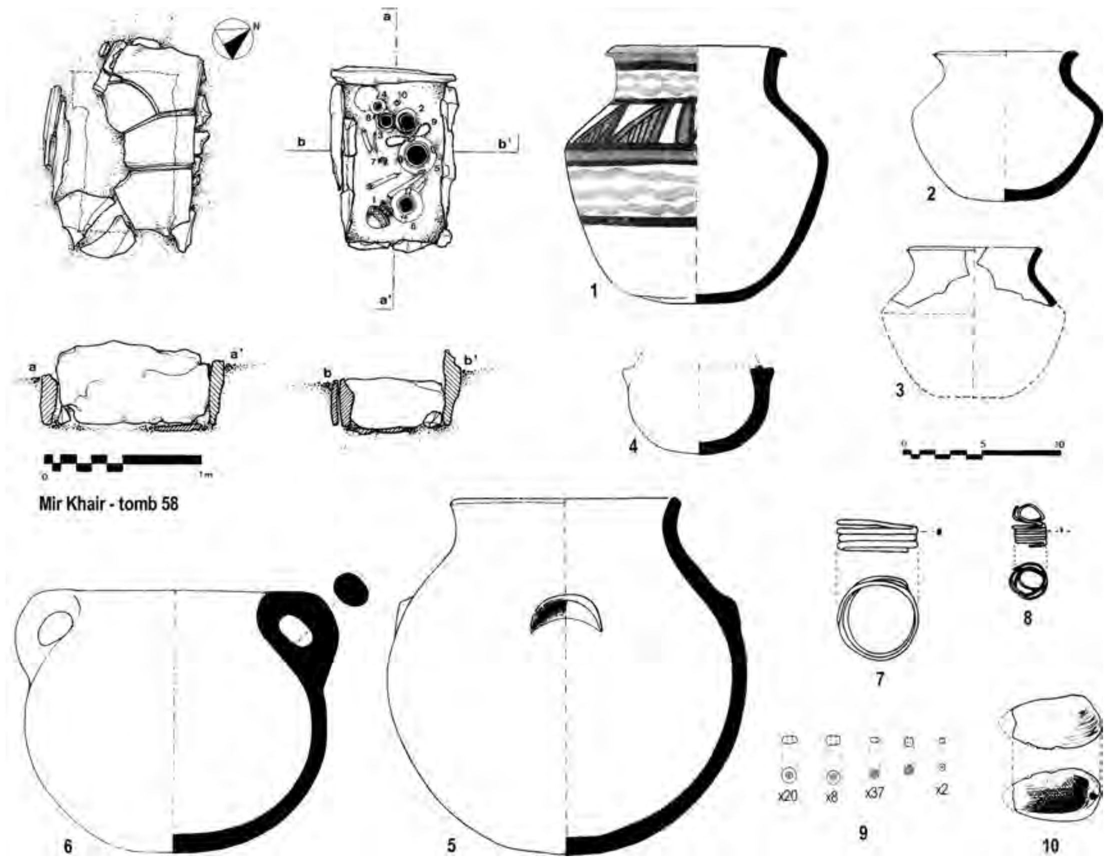

Figure 8.33 Mir Khair, EBA I grave and grave goods (Haerinck and Overlaet 2002: Figure 3) (image courtesy of Bruno Overlaet).

Neumann 2014) with strong connections to early third millennium BC pottery of central-eastern Mesopotamia, in particular with the site of Ahmad al-Hattu in the Hamrin region to the northwest and with sites of the Lower Diyala valley northeast of Baghdad (Eickhoff 1993; Potts 2013b: 207).

Northwest of Ilam town, a further 19 EBA I tombs have been excavated at the cemetery of **Kalleh Nisar** (Haerinck and Overlaet 2008). Some of the tombs here are large enough to have been for collective burial and two have faintly vaulted roofs. Painted monochrome and polychrome pottery vessels of Transitional Polychrome type, and cylinder seals (Vanden Berghe and Tourovets 1994), have good parallels at Mesopotamian sites immediately to the west (Figure 8.34), including the Diyala region, such as Khafajah, Tell Asmar and Tell Agrab, and the Hamrin region, such as Gubba, Razuk and Ahmad al-Hattu (Haerinck and Overlaet 2008: 27–28; Haerinck 2011: 60; Potts 2013b: 207). As Del Bravo (2014: 134) suggests, the sites of the Hamrin region in the EBA I–II phases may have been acting as intermediaries between the urbanised settlements of the Lower Diyala and the more mobile populations of the Luristan uplands. Metal objects from Kalleh Nisar, including rings and pins, are made of deliberate alloys of copper and tin, with 3.5% tin content, some of the earliest true tin-bronzes from anywhere in Southwest Asia (Fleming *et al.* 2005; Helwing 2009). It is possible, but currently unproven, that the tin was mined from the nearby source of Deh Hosein (Nezafati *et al.* 2006, 2009; Helwing 2009). Other burial sites of EBA I date have been found within Ilam town (Soto Riesle 1983; Haerinck and Overlaet 2010b: 282; Haerinck 2011: 61) and at Tepe Jarali northeast of Mir Khair (Thrane 1964; Haerinck 2011: 68).

The site of **Kunji Cave** near Khorramabad in the east of Luristan has yielded eight graves containing at least 33 individuals, all adults, deposited in the slopes below the cave mouth (Figure 8.35) (Emberling *et al.* 2002; Haerinck 2011; Potts 2013b: 207–208). A high degree of dental caries amongst the buried individuals indicates heavy grain consumption from an agriculturally based lifestyle, suggesting that these individuals had good access to agricultural produce (Emberling *et al.* 2002: 57). Pottery from the graves includes so-called "fruit-stands" and many painted vessels, comparable to Early Dynastic I types from Mesopotamia, Susiana and Malyan. A single lead bowl has parallels at Malyan, Susa, Ahmad al-Hattu and Ur (Haerinck 2011: 71). Tombs with painted ceramics at Aliabad and Musiyan on the Deh Luran plain also appear to date to this phase (Helwing and Neumann 2014: 48–49).

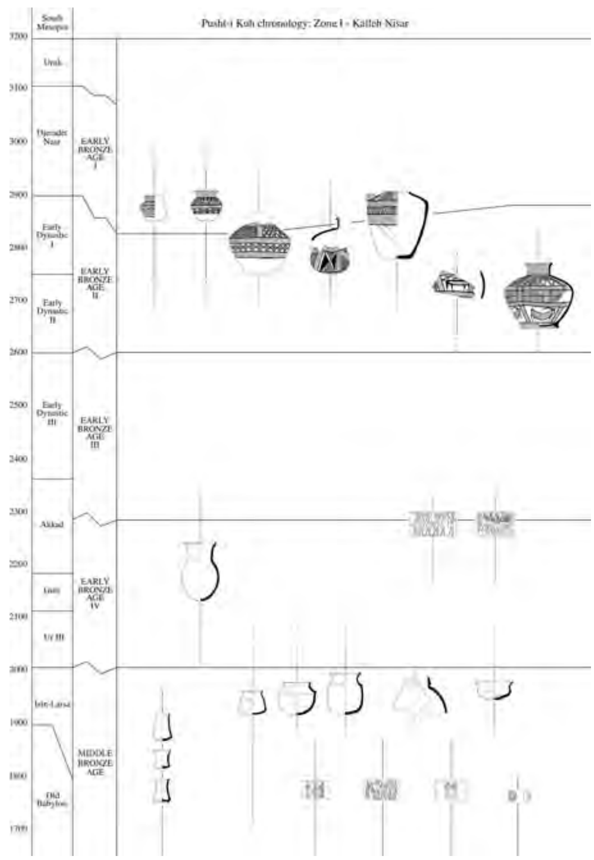

Figure 8.34 EBA I bichrome and polychrome pottery and later pottery from Kalleh Nisar (image courtesy of Bruno Overlaet).

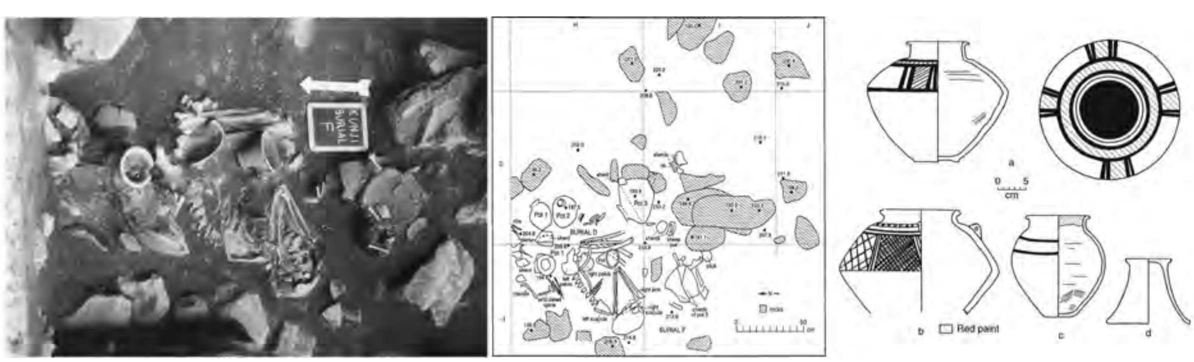

Figure 8.35 Kunji cave, grave D/F and its contents (Emberling *et al.* 2002: figs 6–8) (photo credit: John Speth; images courtesy of the University of Michigan Museum of Anthropological Archaeology).

Metal objects are relatively rare in Luristan tombs of EBA I. From Mir Khair and Kalleh Nisar there are knives and daggers, axes, rings and bracelets, all of copper (Figure 8.36) (Begemann *et al.* 2008: 4, Figure 2), with some indications of alloying of copper and tin to produce bronze rings, bracelets and pins (Fleming *et al.* 2005: 37; Pigott 2008: 56–57), amongst the earliest tin-bronze objects from Southwest Asia (Weeks 2013b: 280). The tin source at Deh Hosein in north-eastern Luristan (Nezafati *et al.* 2009) may be significant in indicating a likely provenance for EBA tin. Tin-bronzes appear at Godin Tepe from *c.* 2600 BC in level III:6 (Frame 2010: 1705).

Figure 8.36 EBA I metal artefacts from graves at Mir Khair (Begemann *et al.* 2008: Figure 2) (image courtesy of Bruno Overlaet).

Luristan in Early Bronze Age II–III

The EBA II phase in Luristan, equating to Early Dynastic I-IIIa in Mesopotamia, sees a major development in tomb layout, with widespread use of communal corridor-shaped tombs (Begemann *et al.* 2008: 5; Potts 2013b: 208–209). Key sites of this phase are Bani Surmah and Kalleh Nisar, north of Ilam town, and Takht-e Khan, Bani Sol, Mehr War Kabud, Shatt-i Siah Safalaki and Cheshmeh-e Takht-e Khan, all in the Pusht-e Kuh in western Luristan (Haerinck and Overlaet 2010a). The EBA II **Bani Surmah** tombs range from 15.7 m to 5 m in length and up to 3 m in width, the largest tombs constructed in the region (Figure 8.37). The tombs were unpaved but covered with massive capstones (Haerinck and Overlaet 2004a, 2006a). Pottery within the graves includes cooking wares as well as unpainted and painted vessels, with parallels at sites in Lower Mesopotamia such as Fara and Abu Salabikh. Other painted vessels, with goat and bird motifs, include Scarlet Ware types comparable to examples from the Diyala and Hamrin regions (Figure 8.38) (Carter 1987: 79; Haerinck and Overlaet 2006a;

Figure 8.37 Bani Surmah, communal tombs with plan of tomb A14 (images courtesy of Bruno Overlaet).

Potts 2013b: 209; Del Bravo 2014: Figure 2; Helwing and Neumann 2014: 47–50). Ongoing use of tin-bronzes is attested in grave goods from EBA II tombs at Kalleh Nisar (Fleming *et al.* 2005: 37).

Cylinder seals from Bani Surmah graves (Figure 8.39) range from Jemdet Nasr and Early Dynastic I styles to Early Dynastic III and even Old Akkadian types (Tourovets 1996), suggesting use of the communal tombs at Bani Surmah over several centuries. With the exception of Bayazid Abad (see above), cylinder seals have not been found in contemporary burial sites more remote from Mesopotamia than Bani Surmah. But Schmidt's excavations at the small settlement sites of Kamtarlan I and II and Surkh Dum-e Luri in central Luristan also recovered Mesopotamian cylinder seals in a wide variety of styles, along with pottery showing Early Dynastic III and Akkadian connections (Schmidt *et al.* 1989: pl. 132; van Loon 1989f).

In the EBA II-III phase, Ernie Haerinck (2011: 66–67) identified three distinct zones of collective burials in the Pusht-e Kuh, all of them reusing tombs originally constructed in the EBA II phase (Begemann *et al.* 2008: 5). Zone I is the northwest of Luristan, including Bani Surmah, Kalleh Nisar and Mehr War Kabud, sites with strong Mesopotamian connections in their material culture. Zone II is at the southern end of the Pusht-e Kuh, including the sites of Qabr Nahi, Takht-e Khan, Tawarsa and Pusht-e Qaleh-e Abdanan, with close relations to the nearby Deh Luran plain (Figure 8.40). Finally, Zone III lies to the north of the Kabir Kuh, with ceramic connections principally to Godin Tepe in level III.6 (Figure 8.41) (Haerinck 1987: 66–67, 2011: 63–64; Ascalone 2006: 107–109; Henrickson 2011a). EBA II-III materials, including vessels related to Scarlet Ware types, also occur in gabled-roofed cist tombs at Mir Vali in the Rumishgan area (van Loon 1989g) and at Dar Tanha and Ban Chaliah in the Badreh region of the Saimarreh valley (Haerinck 2011: 64, 68, 73; Potts 2013b: 210), with parallels in the Diyala and Hamrin regions as well as at Godin Tepe level III:6

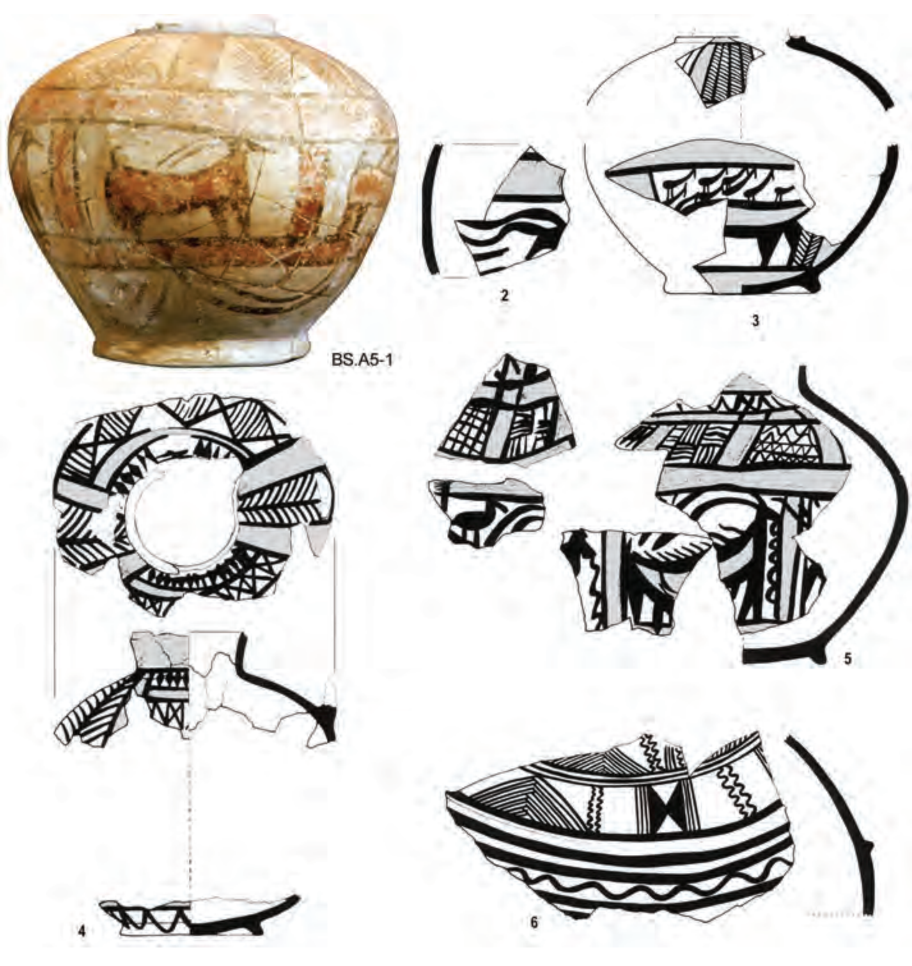

Figure 8.38 Bani Surmah, polychrome painted pottery in Scarlet Ware style (Haerinck and Overlaet 2002: Figure 6) (images courtesy of Bruno Overlaet).

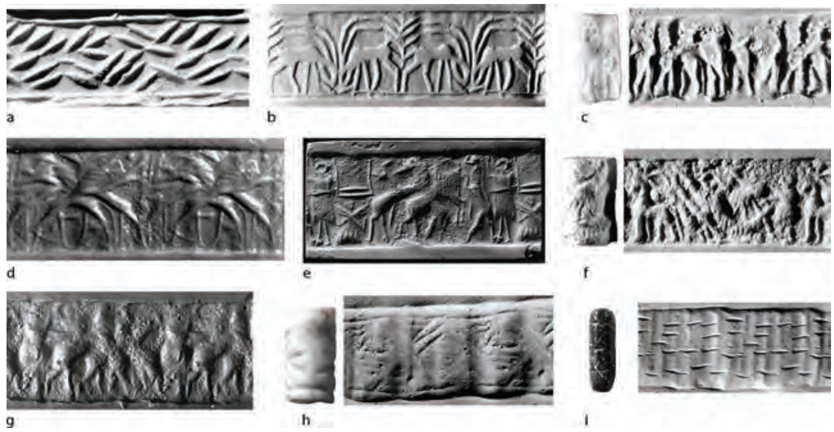

Figure 8.39 Selected cylinder seals, and/or their modern impressions, from Bani Surmah graves (Tourovets 1996: figs 2, 4–6, 8–9) (images courtesy of Bruno Overlaet).

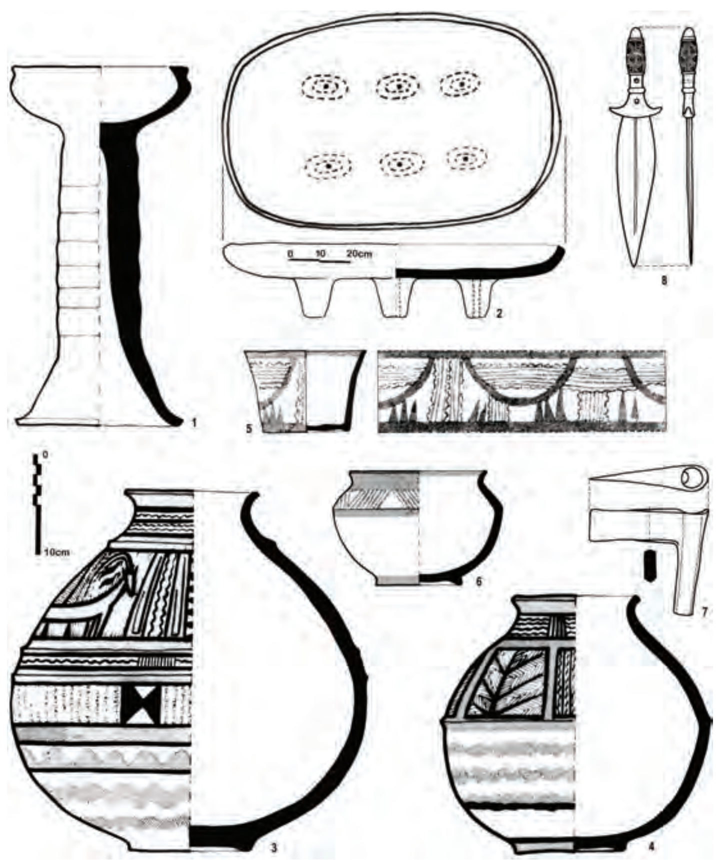

Figure 8.40 Grave goods from selected sites of Luristan showing connections to the Deh Luran plain (Haerinck and Overlaet 2002: Figure 7) (image courtesy of Bruno Overlaet).

(Henrickson 2011a; see below). Small EBA I–III sites occur on the valley floor in Khorramabad, with ceramic connections mainly to the southwest (Hole 2007: 76–77).

Salvage excavation of 15 stone cist graves at **Deh Dumen** in Kohgiluyeh/Boyer-Ahmad Province, well to the southeast of Luristan, recovered tin-bronze vessels, including one bowl with an incised Master of Animals scene and another with a central lion in relief, suggestive of connections with south-eastern Iran in the mid-later third millennium BC (Figures 8.42–8.43) (Oudbashi *et al.* 2016; Sołtysiak and Naseri 2017; Naseri 2019; Sołtysiak *et al.*

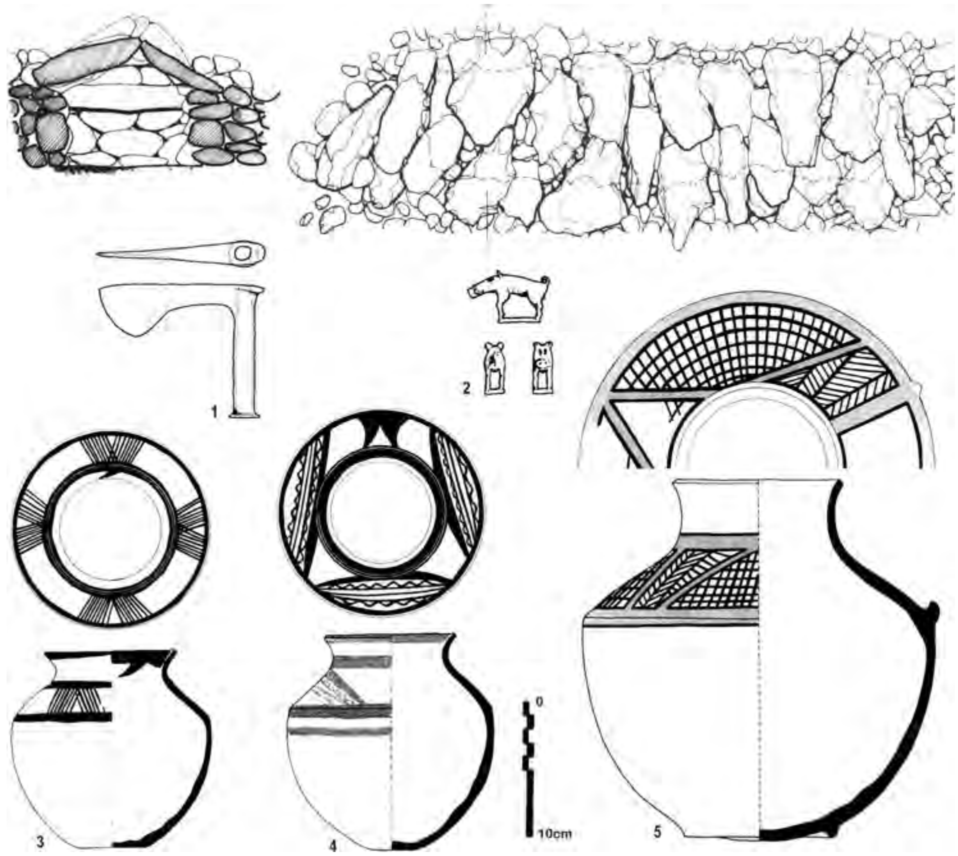

Figure 8.41 Dar Tanha, tomb 1 and grave goods showing connections to Godin III:6 (Haerinck and Overlaet 2002: Figure 8) (image courtesy of Bruno Overlaet).

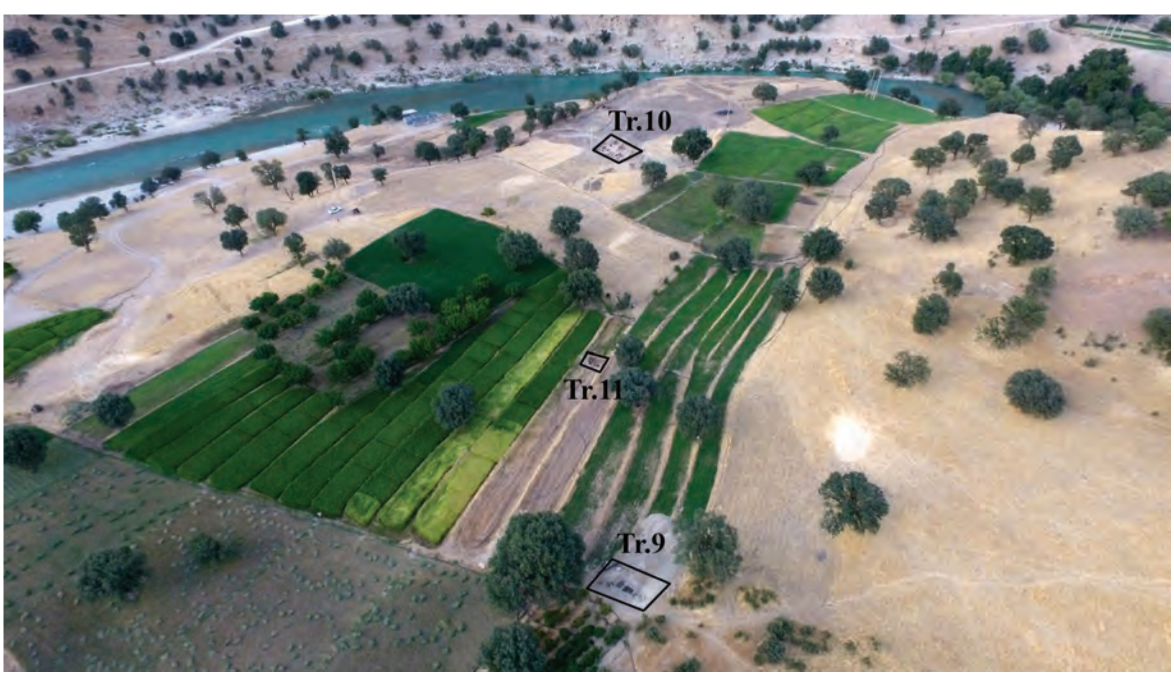

Figure 8.42 Deh Dumen, view of site and excavated trenches (Sołtysiak *et al.* 2019b: Figure 2) (image courtesy of Reza Naseri).

Figure 8.43 Deh Dumen, bronze vessels from Bronze Age graves (Oudbashi *et al.* 2016: Figure 5a-b) (image courtesy of Reza Naseri).

2019b). The site lies on a possible routeway connecting south-eastern Iran with Mesopotamia, through Kerman, Fars and Khuzestan. The looted site of **Deh Pāyeen** in the same region also appears to have been a major cemetery of third millennium BC date (Ghasemi and Watson 2014), while study of human remains from **Lamā** cemetery suggest a degree of mobility in male individuals (Sołtysiak *et al.* 2010a; Sołtysiak 2013; Mucheshi and Jafari 2016). Notably, all these cemeteries are situated on gently sloping hillsides of the Zagros range.

Levels IVB-IVC and tomb 102 at **Tepe Giyan** (Dyson 1965) appear to be contemporary with Godin III:6 (Potts 2013b: 210), while the megalithic tomb at **Gilviran** produced bronze spearheads and arrowheads and two bronze spouted vessels of classic Early Dynastic IIIB style (Bellelli 2002: 16, 134, Tav. 28. 160–161; Haerinck and Overlaet 2013). Bronze Age settlement dating to *c.* 2300–2100 BC, and again to *c.* 1800–1500 BC, is attested at **Baba Jan** IV, levels 5–4, where stone-walled domestic quarters and graves with metalwork and ceramic vessels were excavated (Goff 1976).

Godin III: 1200 years of domesticity

At **Godin Tepe** on the Kangavar plain, after an episode of abandonment following the ETC occupation of the site (see above), period III:6 sees the introduction of new ceramic styles from *c.* 2750 BC, largely in the form of wheel-made monochrome buff wares quite distinctive from the burnished hand-made grey-black vessels of the earlier third millennium BC, even if a few vessels continued to be made in the old ETC manner (R. C. Henrickson 1986, 1987, 2011a, 2011b: 251; Helwing and Neumann 2014: 50–52). Architecture of this period at Godin comprises multi-roomed, mudbrick domestic houses with period III at Godin enduring for over a thousand years and ending at *c.* 1400 BC (Figure 8.44). Interruptions to the millennial succession of domestic life at Godin III are suggested by episodes of abandonment during which mudbrick houses fell into disrepair, and by evidence for earthquake destruction in the form of human skeletons and complete pots buried under collapsed bricky debris (Henrickson 2011b: 215). Intentional human burials from Godin III are exclusively of adults, indicating burial of

Figure 8.44 Godin Tepe, plan of period III:4c (Henrickson 2011b: Figure 6.3) (image courtesy of Hilary Gopnik).

Figure 8.45 Godin Tepe, painted vessels from period III:5 (Henrickson 2011b: Figure 6.24) (image courtesy of Hilary Gopnik).

infants in locations not encountered in excavation, and the grave goods – ceramic and metal vessels above all – are suggestive of some social stratification. One adult skeleton from Godin III:2 includes a metal spearpoint embedded in two articulated vertebrae, definitive evidence for interpersonal conflict in the early second millennium BC (Henrickson 2011b: 235).

Levine and Young (1987) pointed to similarities between the Godin III:6 ceramics and material from grave sites through Luristan, from Susa in period IVA and monochrome painted vessels and sherds from Al-Hiba-Lagash, Telloh-Girsu and Ur in Lower Mesopotamia, which Renette (2015) has reassigned to Godin III:5 equating to Early Dynastic IIIB in Lower Mesopotamia (Figure 8.45). The presence of these painted vessels at several of the major Sumerian cities of the Mesopotamian plain can be situated within an environment of their burgeoning engagement with the highland region and their concern to sustain access to cherished highland resources, as richly attested in archaeological and textual evidence from the Mesopotamian alluvium in the late Early Dynastic III period (Selz 2014). Potts (2016: 86) proposes that Luristan, in particular the Pusht-e Kuh, formed a significant part of the regional toponym of Awan at this time, a major political power accredited in the Sumerian King List as having hegemony over Sumer and Akkad at some stage during the Early Dynastic period (see also Chapter 10).

Excavations at the substantial site of **Chogha Maran** on the Mahi Dasht 100 km directly west of Godin Tepe recovered ceramics comparable to those of Godin III:6 as well as an important collection of clay sealings within extensive ash deposits overlying the Chalcolithic levels of the site (Henrickson 1987, 2011a). In total, about 200 clay sealings were recovered, mostly with cylinder seal impressions and a few instances of stamp seals (Figure 8.46) (Pittman 2014; Renette 2018: 311–312; Khayani and Niknami 2020a, 2020b; Renette et al. 2021). In functional terms, the vast majority of the sealings had been affixed to portable containers including baskets, bags and pots with a small proportion of door peg sealings from closure of storeroom doors. Iconographic parallels for the seal impressions lie to the west, most notably in glyptic from Early Dynastic I-II sites in the Hamrin (Al-Gailani-Werr 1988, Ii 1988; Sürenhagen 2011) Susa (Amiet 1972) and Nineveh (Collon 2003). There are several examples in the glazed steatite/Piedmont style while others depict animals, basically rendered, including horned quadrupeds with distinctive straight legs probably rolled by cylinder seals made of baked clay. Schematic portrayals of humans with outsplayed feet and elongated arms indicate that we are well and truly beyond the iconographically androphobic world of the Proto-Elamite horizon. This remarkable collection of clay sealings attests the presence at Chogha Maran, strategically located on the Great High Road, of an administrative organisation of some kind involved in the receipt of sealed goods arriving at the site in a range of containers and in the oversight of the storage and re-distribution of those commodities to specific individuals or households. The iconographic connections, pointing broadly westwards from Susa in the south to Nineveh in the north, indicate the participation of the Early Bronze Age community at Chogha Maran in the trans-Tigridian world of the western Zagros piedmont (Renette 2018).

As to the later phases of Godin III, intensive surveys of the Sarfirouzabad plain in southern Kermanshah and the Harsin region to the east have identified an upsurge in settlement in the early second millennium BC and into the Late Bronze Age (Naseri and Chehri 2016; Niknami *et al.* 2016; Niknami and Mirghaderi 2019). An off-site cemetery at Godin appears to date to the end of Godin III – one intriguing grave included a most unusual set of carpenter's tools, including saw, blades, chisels and a hammer (Figure 8.47) (Dellovin 2011), similar in some respects to carpentry tools historically attested in Iran (Wulff 1966: 80–88). No richer

Figure 8.46 Chogha Maran, cylinder seal impressions on clay sealings (after Pittman 2014: figs 7–8).

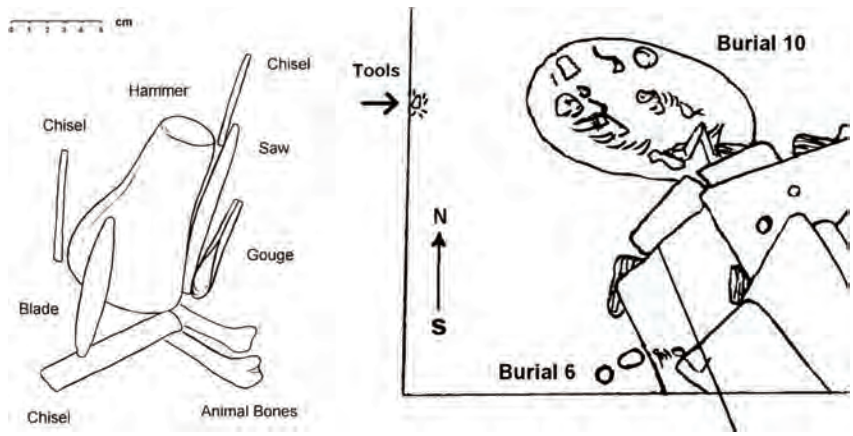

Figure 8.47 Godin Tepe, period III carpenter's tool kit from Late Bronze Age grave (after Dellovin 2011: Figure 1).

summary of the Godin III centuries in central western Iran can be found than the concluding paragraph to Robert Henrickson's magisterial survey (1986: 28):

> The changing distribution of Godin III:6-2 pottery in central western Iran reflects a dynamic process of socio-political and economic integration of a mosaic of localized ethnic groups into loose confederation. Long-distance trade and political and economic pressure from the Mesopotamian lowlands, combined with factors of local economy and geography, contributed to this development. Even when the integration reached its greatest extent and the central western highlands exhibited considerable overall cultural homogeneity, regional differences are still found, probably marking various ethnic groups. After a period of strength and relative unity, the regional organization disintegrated into a simpler and more localized economy in which pastoralism was apparently dominant as the Godin III tradition came to an end.

Luristan in Early Bronze Age IV and beyond

EBA IV is attested only in Haerinck's Zone I, the northwest of Luristan where the Mesopotamian connections are most richly encountered. At sites such as Kalleh Nisar, Darvand A, Gululal-e Galbi and Sardant, small tombs of so-called "Gutian" type date from the Late Akkadian to Isin-Larsa periods, spanning the transition from the late third to early second millennia BC (Haerinck and Overlaet 2010a: 115; Potts 2013b: 210–211). Material grave goods include shaft-hole axes made from folded sheet bronze (Fleming *et al.* 2005: Figure 3) as well as ceramic vessels showing connections to Mesopotamia to the west and to Godin to the northeast (Figure 8.48) (Begemann *et al.* 2008: 7–8). Tin-bronze objects occur in some tombs of EBA IV date but much less commonly than in earlier phases of the EBA

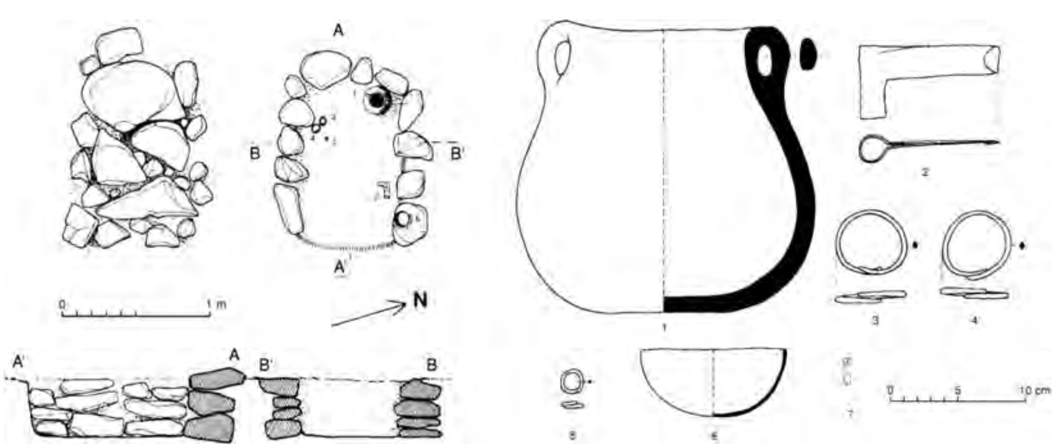

Figure 8.48 Kalleh Nisar, EBA IV tomb and its contents (Begemann *et al.* 2008: pl. 2) (image courtesy of Bruno Overlaet).

(Bellelli 2002; Fleming *et al.* 2005: 38; Helwing 2009). In the Khorramabad valley only one site of EBA IV date was located in survey and its occupation is followed by a 700-year hiatus in settlement in the valley (Hole 2007: 77).

EBA tombs in Luristan often continued in use well into the second millennium BC (Haerinck and Overlaet 2004a: 128), while other new cemeteries show parallels in their ceramics with Middle Bronze Age phases of Godin III and Tepe Giyan. Bronze vessels become increasingly common from the Middle Bronze Age, as attested at Godin Tepe, Chigha Sabz, Tepe Jamshidi and other sites of Luristan (Potts 2013b: 211). By the Late Bronze Age, the practice of burying the dead in cemeteries of stone-clad tombs falls into decline, with only a handful of examples known, such as Sarab Bagh in the Pusht-e Kuh (Haerinck and Overlaet 2004a: 128) and Zarde Savar in Rumishgan (Schmidt *et al.* 1989). A significant Late Bronze Age site of the region is **Surkh Dum-e Luri**, where a multi-roomed structure was excavated by Schmidt (Figures 8.49–8.51) (Schmidt 1989; van Loon 1989e). Finds from this extraordinary site where most of the deposits date to the overlying Iron Age (Chapter 11), include Late Bronze Age ceramics, bronze objects, stone beads with cuneiform inscriptions giving Kassite names and multiple cylinder seals, including one belonging to an official of a Kassite king Kurigalzu (there are several kings of this name; Brinkman 1976: 48) and other seals of Middle Elamite, Mitanni and Middle Assyrian types (van Loon 1989f: 218–220).

The mound of **Tepe Guran** in Hulailan, first settled as a Neolithic site (Chapter 5), is reoccupied and used as a cemetery in the Late Bronze Age, with ceramics indicating far-flung connections, including the Khabur Ware of Upper Mesopotamia and classic goblets of Kassite and Middle Elamite style (Thrane 1999, 2001). Khabur Ware also occurs in Godin Tepe III:2, graves at Tepe Giyan II, and at Jamshidi and Baba Jan (Henrickson 1987: 213). As at Guran, the mound of Godin Tepe hosts a Late Bronze Age cemetery (Dellovin 2011), and there is a

Figure 8.49 Surkh Dum-e Luri, excavations in 1938 (Schmidt *et al.* 1989: pl. 38) (image courtesy of the Oriental Institute of the University of Chicago).

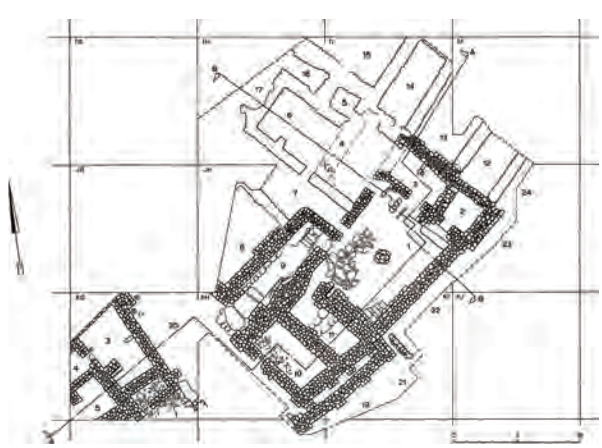

Figure 8.50 Surkh Dum-e Luri, plan of level 2C (Schmidt *et al.* 1989: pl. 51) (image courtesy of the Oriental Institute of the University of Chicago).

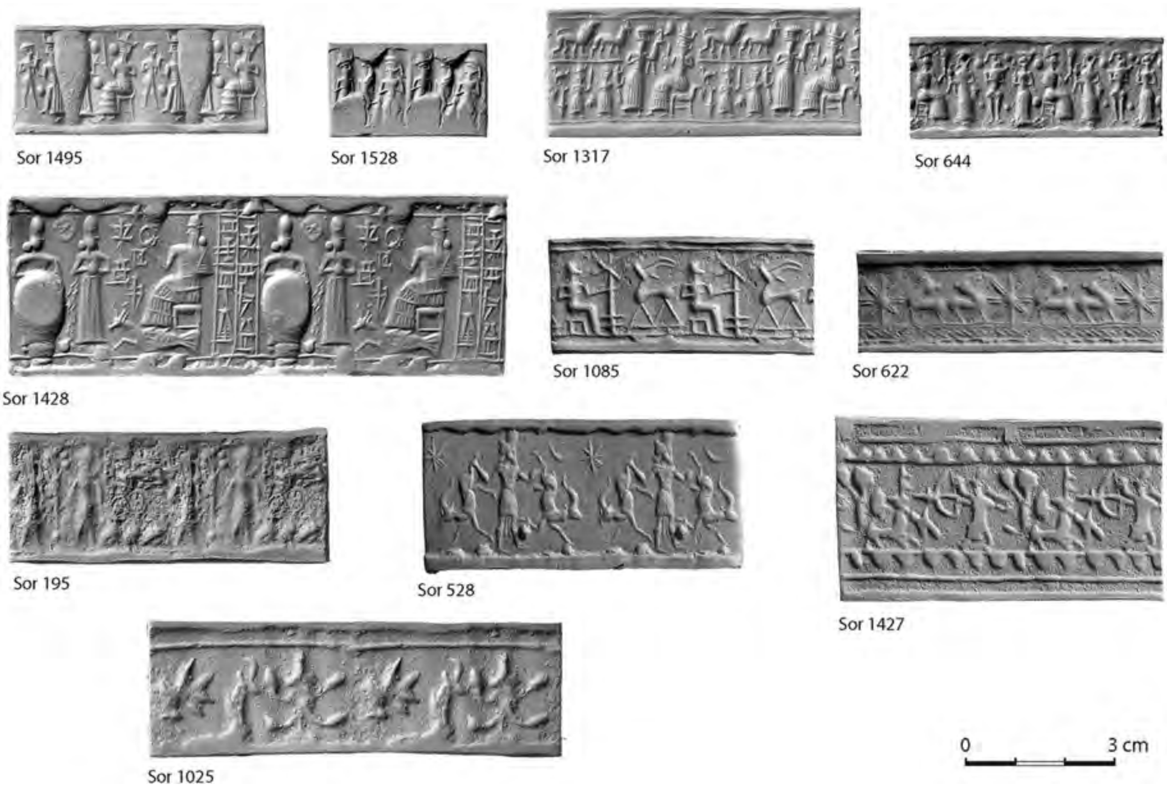

Figure 8.51 Surkh Dum-e Luri, Late Bronze Age cylinder seals (modern impressions) (Schmidt *et al.* 1989: pl. 134) (images courtesy of the Oriental Institute of the University of Chicago).

return to settlement in the Late Bronze Age of the Khorramabad valley (Hole 2007: 77–78) and in the Bakhtiari highlands (Azadi 2015). One grave at Baba Jan contained ten bronze spearheads (probably in fact arrowheads – Thrane 2001: 48), assorted beads, pottery and a stone lid, and has good parallels with late Godin III and Giyan IIB, therefore dating to the mid-second millennium BC (Goff 1976: 26; Henrickson 2011c). Multiple graves of Late Bronze Age date were excavated at Tepe Giyan I (Contenau and Ghirshman 1935). Many sites of the region appear to have been abandoned around the end of the Late Bronze Age (Overlaet 2005: 9).

As Potts argues (2013b: 212), the items at Surkh Dum-e Luri may have been deposited in the sanctuary as votive items (and mainly in the Iron Age – Chapter 11), but they still indicate some form of interaction, however indirectly, with the Late Bronze Age polities of Assyria and Babylonia. Taken with the interregional connections attested in the ceramics from several sites of Late Bronze Age Luristan, the picture is very much one of continuing manifold connections with contemporary powers in all directions.

The problem of Luristan in the Bronze Age

The classic view of the human occupation of Luristan in the Bronze Age, and in other periods, has been well articulated by Frank Hole (2007: 63–64):

> Indeed, it appears that most sites were small and short-term, and for long stretches of time, Luristan may have lacked permanent settlements. When sites were present, their ceramic parallels came from diverse regions, possibly reflecting shifting social, economic, and political alliances.

Can we contest this view in the light of the evidence adduced above? The ceramic, metalwork and glyptic connections radiating like spokes from Haerinck's three EBA II-III zones give a vibrant indication of the nature of Luristan in the Early Bronze Age, a highland region located in the midst of multiple cultural zones of Iran and Mesopotamia and clearly interacting with most of them, but apparently not with their ETC neighbours to the north and northeast. It is likely that sub-regions, even individual valleys, of Luristan were creating and pursuing their own historical trajectories through their internal dynamics and external relations, shaped by geography and cultural traditions. Frank Hole has envisioned ancient Luristan as "an enclosed periphery, one that has no center and whose valleys are impacted differentially by events from outside. If we had complete information, we would probably find that each valley holds a unique history," a characterisation that captures the essence of Luristan's topography and regional situation, but that accredits little sense of agency or local development to the inhabitants of Luristan, ever "impacted" as they are "from outside."

As we have seen above, there is no shortage of cemetery sites in Luristan throughout the Bronze Age, the Early Bronze Age in particular. The Middle-Late Bronze Age of the region is much less well attested or understood (Overlaet 2005). Many of the EBA cemetery sites are quite spectacular in terms of the investment of energy in their construction and the evidence for transregional connections in the materials and artefacts deposited with the burials. The cemeteries often host long-lasting use, covering several centuries in some cases, and similar practices continue well into the Iron Age from *c.* 1250 BC (Chapter 11: Overlaet 2013). Recurrent, long-term use of cemeteries challenges Hole's (2007: 63) characterisation of sites as being "short-term," while also defining a sense of agency in people's attachment to place, clearly a significant factor in human interaction with the distinctive landscapes of Luristan. A critical aspect is the frequent location of cemeteries, and graves within in them, in highly visible places ensuring the ancestors enjoyed a "tomb with a view" in the neat phrase of Emberling *et al.* (2002: 64).

Settlement sites directly associated with these cemeteries are rare or apparently absent, the houses and intra-mural graves of Kamtarlan I and II notwithstanding (van Loon 1989b), and this attribute has given rise to a widely accepted view that the peoples of Luristan were pastoral nomads who did not settle in permanent villages. As Potts (2013b: 212) articulates, however, the archaeological focus has been very much on the cemeteries themselves, partly because of the likelihood of finding spectacular assemblages of artefacts, and there has been little systematic attempt to investigate settlement sites in the region (de Meyer 2004; Hole 2007; Begemann *et al.* 2008: 40–41). Hole's (2007) survey of the Khorramabad valley detected significant numbers of settlement sites, ranging in date from Early Chalcolithic to Islamic, but with significant breaks in evidence for occupation during the periods *c.* 3500–2800 BC, *c.* 2400–1800 BC and *c.* 1400–800 BC. Several village sites of EBA I-III date were found in the Khorramabad valley (Hole 2007: 76), and it is plausible that these villages served as regional bases for communities pursuing mixed arable and pastoral lifestyles, aligning with Clare Goff's (1971: 149) observation that EBA settlement in Luristan was concentrated on ecotones at the edges of plains with optimum opportunities for mixed subsistence activities including transhumance.

A key factor in the presence, density and distribution of human settlement in Luristan is the basic geography of the region. As historians, geographers, anthropologists and ethnographers have stressed (Edmonds 1922; Stein 1938; Oberlander 1965; Black 1972; Black-Michaud 1986), plains with extensive spreads of soils suitable for agriculture are in short supply in Luristan, the best of them being the lacustrine plains of Hulailan and Kuh-i Dasht, where settlement can be traced back to the Neolithic and Chalcolithic periods (Chapters 5–6). Outside these plains there is little scope for agricultural activity, rain-fed or irrigated, and the verticality of the topography is well-suited to transhumant pastoralism, with herds of goat and sheep herded to seasonally available pastures. A further factor, often ignored in interpreting ancient settlement patterns, is security, or lack of it. If we agree with Hole's (2007: 66) view that the landscape of Luristan "favors hardy, independent, and combative people," then we may speculate that human communities in the Bronze Age, and beyond, may have been reluctant to invest too much energy and time in settling and farming in remote valleys only to have their fields and stores raided at harvest time by neighbouring or distant tribes. On his visit to Khorramabad in 1917, Edmonds (1922: 443) comments on the need for villagers to harvest crops quickly so that crop processing activities could take place in the safety of their homes rather than out in the dangerous fields. We may suggest that the long hiatuses in settlement, attested for example in the Khorramabad valley (Hole 2007), coincide with chronic episodes of such insecurity and instability. Modern settlement of much of the region can be traced only as far back as Reza Shah's policy of sedentarisation of nomads in the 1920s–1930s (I. Mortensen 1993; Hole 2007: 82; Potts 2013b: 212).

A critical concern in the question of human society and economy in Bronze Age Luristan, then, is when did transhumant pastoralism begin, and can we reasonably assume that the Bronze Age communities of the region were indeed undertaking vertical seasonal movements with their herds of goat and sheep, as their primary subsistence pursuit? Robert Adams (1974) originally suggested that the first development of pastoral nomadism in this and other regions of western Iran went hand-in-hand with the appearance of the first large-scale centres of Khuzestan and Lower Mesopotamia around 3200 BC, whereby animal herders took advantage of the new economic opportunities for trade and exchange in animal and other products provided by the dense settlements of the plains. During historical times, the inhabitants of Luristan provisioned major nearby cities such as Hamadan and Nehavand with valuable materials such as charcoal, carpets, pack-bags, horse-trappings and mules (I. Mortensen 1993: 41), and we may imagine that a similarly diverse range of products and materials were brought to the Bronze Age cities of Khuzestan and Mesopotamia from the adjacent mountain zones by at least partly mobile tribes. Prior to Reza Shah's sedentarisation policy, the entire region was home to tribes of pastoral nomads, some of them covering enormous distances in their seasonal migrations, but this pattern of human-animal engagement with Luristan can be traced with confidence only as far back as the unsettled times of the Turkic and Mongol incursions from the 10th–14th centuries AD (de Planhol 1969; Potts 2014), and we need to exercise extreme caution in ascribing this historically attested situation uncritically back into the distant past, as we have discussed in previous chapters. Debate concerning the timing and nature of early nomadic pastoralism in Luristan, Fars and elsewhere in Iran, is ongoing but here we concur with Potts (2014: 45) in his assertion that "until such time as evidence to the contrary emerges, nomadism, as opposed to transhumance or herdsman husbandry, was not practiced in Iran during the prehistoric era or the Bronze Age."

A further issue in considering the nature of Early Bronze Age societies of Luristan is their access to and use of metals. The frequently elaborate inclusion of metalwork in the tombs of Luristan argues for ready access to the necessary raw materials and/or the finished products. Prime amongst these metals was tin, from *c.* 2800 BC replacing arsenic as the major alloy component added to copper to form bronze (Moorey 1982; Weeks 2004, 2013b). As Barbara Helwing (2009: 209) stresses in her review "the appearance of tin as the second major alloying partner of copper to produce bronze is regarded as one of the markers of the beginning of the Bronze Age in most parts of the Old World." In Iran, tin sources are known in Sistan as well as further east in Afghanistan and Uzbekistan (Stech and Pigott 1986; Vatandoust 1999; Parzinger and Boroffka 2003; Kaniuth 2007), but the discovery of a major tin-copper source at Deh Hosein in the central Zagros (Momenzadeh *et al.* 2002; Nezafati *et al.* 2006, 2009) has opened the possibility of tin availability for the Bronze Age societies of Luristan much closer to home. Ancient mining activities at the ore-rich source of Veshnaveh near Qom on the Central Plateau have been dated to the third and second millennia BC and may also have been exploited by communities of Luristan to the west (Stöllner *et al.* 2011; Weeks 2013b: 280).

Significantly higher proportions of tin in Luristan bronze artefacts as compared to contemporary material from Lower Mesopotamia (Cuénod *et al.* 2015) strongly suggests that the communities of Luristan had ready and constant access to tin while their Mesopotamian neighbours were more at the mercy of changeable geopolitical circumstances that could all too readily disrupt established trading routes. Comparative analysis of lead isotope data from Luristan and Mesopotamian bronze objects shows significant variation (Figure 8.52), suggesting that communities at the Mesopotamian sites did not have access to the copper sources of Deh Hosein and its region, which feature prominently in the Luristan metalwork. Begemann and colleagues (Begemann *et al.* 2008: 38) propose copper and tin sources in the region of southern Rajasthan/northern Gujarat as most plausibly matching the lead isotope profiles of Mesopotamian Early Bronze Age metals, with trade conducted by sea along the Persian Gulf and via Dilmun-Bahrain. Furthermore, Helwing (2009: 213) argues that a decline in the use of tin in the later Early Bronze Age tombs of Luristan may be caused by the usurpation of control over mining and use of metals in this region by the expanding empires of Akkad and Ur III (Chapter 10), denying or limiting access of local communities to proximate metal sources.

Prior to that decline, the strong ceramic connections attested in particular in the EBA I–II grave assemblages of Luristan with contemporary ceramics, such as Transitional Polychrome Pottery and Scarlet Ware (Del Bravo 2014), in the Hamrin region to the northwest and the Lower Diyala of central-eastern Mesopotamia, suggest a

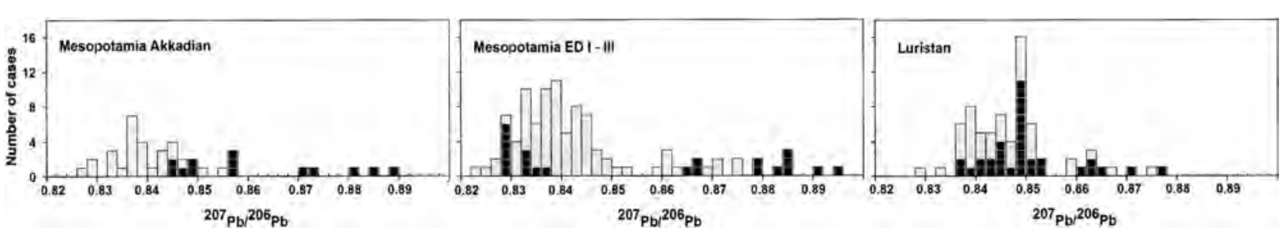

Figure 8.52 Lead isotope data of copper-base artefacts from Mesopotamia and Luristan (after Begemann *et al.* 2008: Figure 11).

significant role for the societies of Luristan in channelling cherished materials from the highland zone via the Hamrin and into the nascent EBA towns of the Lower Diyala and beyond. These ceramic connections clearly underpin deeper socio-cultural connectivity between these diverse regions of the Iran-Iraq borderlands along the Zagros flanks and its outliers. Thus, sites in Haerinck's (2011) Zone 1 of Luristan, including Bani Surmah, Kalleh Nisar and Mir Khair, show a trend through time from single to multiple burials that is matched by a similar trend at sites in the Hamrin region including Ahmed al-Hattu and Kheit Qasim I (Forest 1980; Eickhoff 1993). In short, the Bronze Age burial sites of Luristan can only begin to be understood through investigation of their situation and role within a broad geographical framework.

Regional dynamics in Bronze Age Fars, 2900–1100 BC

The Bronze Age of Fars has received sufficient archaeological investigation to enable basic interpretations of long-term trends in issues such as settlement patterns, demographic dynamics and shifting highland-lowland engagements (Sumner 1986a; Voigt and Dyson 1992: 135–142; de Miroschedji 2003; McCall 2013a). Surveys and excavations within Fars, initially in the Kur river basin, have established a firm sequence of periods based on ceramic assemblages, comprising the Banesh (*c.* 3500–2600 BC) and Kaftari (*c.* 2200–1600 BC) succeeded into the Early Iron Age by the Qaleh and Shogha-Taimuran (Sumner 2003: Table 12; McCall 2013a: 287–289, Table 15.2). The Banesh period in Fars is thus approximately contemporary with the Late Uruk/Late Susa II and Proto-Elamite phenomena of the Late Chalcolithic and the initial Early Bronze Age phases of western Iran, and is separated from the Kaftari phase by a significant episode of regional abandonment lasting perhaps as long as 400 years, again occurring significantly before the putative 4.2 kya climatic event (Table 8.4). At the start of the Late Banesh phase, *c.* 2900–2500 BC, settlement across Fars suffered a major decline coincident with the end of Proto-Elamite impact across much of Iran, while the Kaftari period hosted a resurgence of settlement followed by a steady reduction in site numbers and density in the later Kaftari and Qaleh phases (Sumner 2003; Petrie *et al.* 2006; McCall 2013a: 284; Overlaet and Pincé 2018). By the later third millennium BC, lowland written sources in Elam and Mesopotamia refer to the Fars region as Anshan, with Tal-e Malyan in the Kur river basin identified from texts as the major city of Anshan (Reiner 1973b), and we are able to use these and other sources to investigate highland-lowland interactions (Stolper 1984b; Zadok 1994; Potts 1999).

Cultural geography of Fars

The Fars area is dominated by the massif of the southern Zagros Mountains and its associated plains and valleys, an area subject to hot, dry summers and cool, wetter winters (Figure 8.53). Major regions of Fars with significant Bronze Age archaeology include the Kur river basin, the Mamasani district and the Fasa and Darab plains. The Kur river basin to the north of Shiraz comprises a total area of 3,400 km^2, with high plains at an average altitude of 1,600 m and mountains rising to 3,400 m. The climate and environment of the region, occasionally assisted by irrigation, enabled the development of agriculturally based societies cultivating wheat and barley and herding goat, sheep and cattle (Miller 1985; Zeder 1991). The dominant and most extensively excavated site in the Kur river basin is **Tal-e Malyan**, a complex of low mounds spread over 200 ha (Carter 1996; Sumner 2003) and a site we have previously encountered through its Proto-Elamite engagement (Chapter 7). Other notable sites in this region include **Darvazeh Tepe** of later second millennium BC date (Jacobs 1980) and the Early Kaftari site of **Tal-e Nokhodi** (Goff 1963, 1964).

In north-western Fars, the region of Mamasani has been subject to intensive archaeological investigation (Potts *et al.* 2005; Potts *et al.* 2009). The Mamasani region, 90 km northwest of Tal-e Malyan, comprises three intermontane valleys forming a major natural route connecting Anshan and the southern Zagros uplands with Khuzestan and beyond. Covering some 250 km^2, the Mamasani district includes significant expanses of arable

Table 8.4 Chronology of Fars and Khuzestan in the Bronze Age (after McCall 2013a: Table 15.1)

Dates cal BC	*Fars*	*Khuzestan*	*Periods*
1300–1000	Shogha-Teimuran Qaleh/Middle Elamite	Susa VIII–	Middle Elamite II–III
1600/1500–1300	Qaleh	Susa VII–	Middle Elamite I
1800–1600/1500	Late Kaftari	Susa VI	Old Elamite/Sukkalmah
1900–1800	Middle Kaftari	Susa V	Old Elamite/Sukkalmah
2200–1900	Early Kaftari	Susa V	Old Elamite/Shimashki/Ur III
2600–2200	Banesh-Kaftari transition/hiatus	Susa IVA–B	Early Dynastic III/Akkadian
2900–2600	Late Banesh	Susa IIIC	

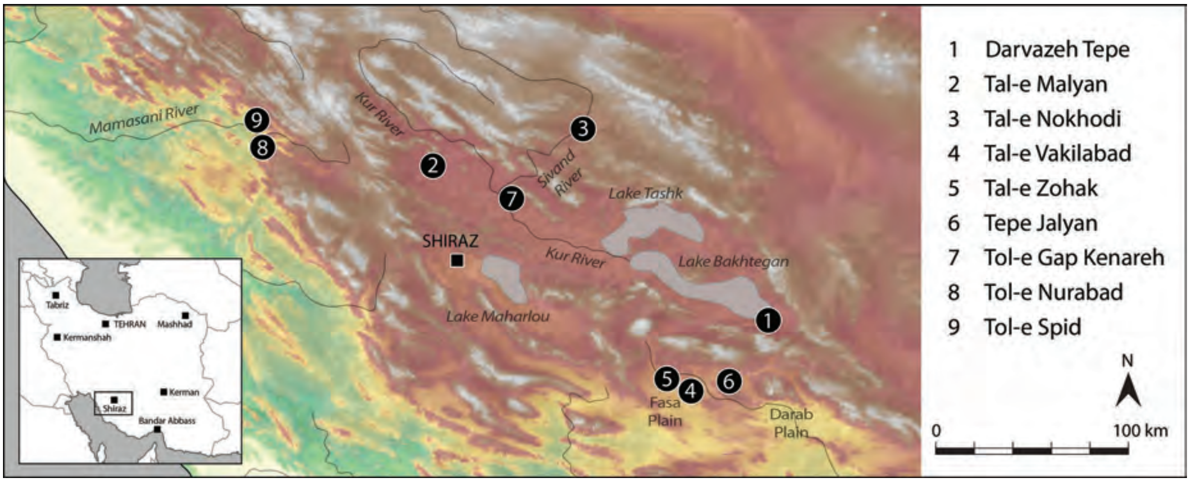

Figure 8.53 Map of Fars, showing key sites and features.

land capable of sustaining high levels of population through cultivation of cereal crops and husbandry of animals (Roustaei *et al.* 2006). Notable Bronze Age sites in Mamasani include **Tol-e Spid** and **Tol-e Nurabad**, with deposits dating to Banesh, Kaftari, Qaleh and Middle Elamite phases (Potts *et al.* 2009b; Weeks *et al.* 2009). Regional survey has also demonstrated a significant Bronze Age presence in this area (McCall 2009; Zeidi *et al.* 2009). Finally, the arable valleys of Fasa and Darab are situated southeast of Shiraz at an altitude of 1,100–1,400 m (de Miroschedji 1972b). Initial surveys and excavations at sites including **Tal-e Vakilabad** and **Tal-e Zohak** indicate Kaftari-period occupation without a clear Banesh presence (Kerner 1993), while communal tombs of mid-third millennium BC date at **Tepe Jalyan**, lacking contemporary settlement sites, may attest burial practices similar to those discussed above for Luristan in the Bronze Age (de Miroschedji 1974).

Late Banesh settlement in Fars, 2900–2300 BC

Late Banesh ceramics are characterised by vessels decorated with painted geometric and animal motifs, matching contemporary assemblages from Susa IIIC and IVA (Voigt and Dyson 1992: 133–134; Sumner 2003: 53). At Malyan, Late Banesh occupation is reduced in area from that of earlier Banesh phases, with settlement covering up to 40 ha within a total enclosed area of 200 ha. A perimeter wall with internal rooms surrounded the settlement at this time (Chapter 7), but earlier Middle Banesh buildings appear not to continue in use into the Late Banesh phase (Nicholas 1990; Abdi 2001b; Sumner 2003; Miller and Sumner 2004; Alden *et al.* 2005). Similarly, Late Banesh occupation in the Mamasani region is significantly reduced from Middle Banesh times, with stratified deposits excavated only at Tol-e Nurabad (Weeks *et al.* 2009), while no trace of Late Banesh materials has been found in the Fasa and Darab regions of eastern Fars, suggesting abandonment of permanent settlement in this region by 2900 BC (de Miroschedji 2003). The overall picture for Fars in the Late Banesh phase is of retrenchment and regional abandonment of settlements (McCall 2013a).

An uncertain span of time separates the Late Banesh and Kaftari periods, an issue under exploration at the site of **Tol-e Gap Kenareh** (Khanipour *et al.* 2017). At Malyan, excavations in H5 recovered vessels that appear to be transitional between the Banesh and Kaftari periods, suggestive of a minor scale of continued settlement at Malyan or a shorter than assumed period of abandonment in the mid-third millennium BC (Miller and Sumner 2004; Mutin 2013a). These ceramic forms may also suggest a local origin for the development of Kaftari wares, but with parallels in assemblages from Susa IV and Godin Tepe III 6–5. Nothing similar has been found in the Mamasani or Fasa and Darab regions (McCall 2013a: 291).

Kaftari settlement in Fars, 2200–1600 BC

Distinctive Kaftari ceramics, in plain and painted forms, are widely found across Fars, indicating a resurgence in settlement by the end of the third millennium BC or slightly later. At Malyan, surface collection and excavations suggest that Late Kaftari settlement covered up to 130 ha of the site, enclosed by a new city wall built atop the Banesh structure (Sumner 1989b, 2003; Petrie *et al.* 2005). Survey in the Kur river basin suggests a rapid spread of

Early Kaftari settlement succeeded by a steady decline through the Late Kaftari to Qaleh periods (Sumner 1989b), a pattern broadly matched by survey and limited excavation data from the Mamasani and Fasa and Darab regions (McCall 2013a: 292). Kaftari ceramics in the Mamasani region suggest affiliations with contemporary sites to the north in Luristan rather than with Kaftari sites in central and eastern Fars (Potts 2013a: 131).

Qaleh and Middle Elamite settlement in Fars, 1600–1100 BC

Settlement across Fars in the Qaleh period suffered a major decline, with site numbers in the Kur river basin reduced by half and occupation at Malyan down from 130 to 40 ha (Sumner 1989a, 1989b; Carter 1996; Overlaet 2007). The EDD building at **Malyan** includes ceramics of Middle Elamite II–III type, indicative of contact with lowland Elam to the west (see also Chapter 10). Within the same building, the recovery of administrative Elamite texts brings the region back into the sphere of written history, after an interval of up to 1,500 years since the end of the Proto-Elamite phase at Malyan. The EDD Elamite texts record the storage and disbursement of materials such as metals and finished goods and the use of decorated objects in temples (Stolper 1984a). This brief historic phase at Malyan ends by *c.* 1100 BC with the construction of Qaleh-type pottery kilns in the ruins of the EDD building. Qaleh and Middle Elamite materials are also found in the Mamasani region but not in Fasa and Darab (Petrie *et al.* 2006). A single inscribed Middle Elamite brick from Tol-e Spid, recording a temple dedication, hints that both literacy and temple construction and dedication may have been relatively widespread across Fars in the Middle Elamite period (see also Chapter 10).

Interpreting settlement and society in Bronze Age Fars

In light of the ceramic and settlement evidence discussed above, how then do we understand the nature of Bronze Age societies of the Fars region through the centuries from *c.* 2900 to 1100 BC? Firstly, we need to ensure some confidence in the reliability and representativeness of the evidence coming as it does from only one extensively excavated site (Tal-e Malyan), several modestly excavated sites plus a considerable amount of survey data. A recurrent issue is the extent to which the lack of evidence for settlement during specific periods can be equated with a real lack of human presence, or may be due to other factors such as burial of sites by post-occupation geomorphological processes (Brookes *et al.* 1982), relocation of settlement to areas of Fars not yet investigated by systematic survey (McCall 2013a: 294) or adoption of modes of living less likely to leave significant traces in the archaeological record.

Nevertheless, the decline in settlement attested in the Late Banesh period, both at Malyan itself and across the survey data, does suggest a crisis in Fars as a component of a massive scale of transregional abandonment and disruption across Iran in the early-mid third millennium BC. Sumner's (1986a, 1989b) argument that societies in Fars during this time shifted from settled farming to fully nomadic pastoralism finds slight support in the faunal assemblages of pre-Late Banesh sites that are increasingly dominated by goat and then by sheep (Zeder 1991; Abdi 2003b), but such herding practices might equally fit with village-based pastoralism and seasonal transhumance (McCall 2013a: 295), widespread practices not to be confused with full nomadic pastoralism, as previously discussed. Significantly, palaeo-environmental evidence from Lake Maharlou, southeast of Shiraz, indicates a period of enhanced aridity for most of the third millennium BC (Djamali *et al.* 2009b), which would have had a significant impact on harvest yields over a period of decades or longer thus directly affecting the population carrying capacity of the limited available arable land of the Fars plains.

By 2300 BC textual sources in Mesopotamia refer to "Anshan" and "Anshanites," and to the conquest of Anshan by the Akkadian ruler Manishtushu a few decades later (Chapter 10; Stolper 1984b; Zadok 1994; Potts 1999), which may provide a context for the rebuilding of the Malyan city wall around this time (Sumner 1985). These texts also suggest the forging of an Anshanite identity by the Early Kaftari period, even if imposed or stimulated by external forces. Ceramic finds across the Persian Gulf indicate a degree of maritime connections (Potts 2003; Petrie *et al.* 2005), perhaps related to metals acquisition or other forms of trade and exchange. Increasing Elamite impact on the highland zones is attested through the earlier second millennium BC (Chapter 10; Stolper 1984b; Moghaddam and Miri 2003, 2007), with Mamasani incorporated into a communication route connecting Susa with Anshan (McCall 2013a: 297). The value of the region to the burgeoning Elamite kingdom to the west is explicit in the royal title "king of Anshan and Susa' attested in texts from Susa (Stolper 1984b: 28–29). Sites in western Fars show clearer and greater Elamite impact in their material assemblages than those in the east of the region (McCall 2013a: 297), delineating a limit across the middle of Fars to Elam's zone of influence at this time.

Archaeobotanical and zooarchaeological evidence from Malyan in the Kaftari period indicates a stable regime of animal management focused on cattle, sheep and goat, with a significant level of intra-settlement hierarchy and economic centralisation (Zeder 1991), coupled with an environmental impact in the form of deforestation and an associated switch to animal dung fuel, and the intensified exploitation of a range of cereal and tree crops including olive and vine (Miller 1985) continuing into the Late Kaftari and Qaleh periods. Faunal assemblages from the Qaleh period have greater representation of horse and camel bones alongside the dominant sheep, goat and cattle, indicating an increasing reliance on pack animals likely used in transport of local and non-local materials and goods (Zeder 1991). Palaeoclimate evidence from Lake Maharlou suggests an episode of wetter conditions from *c.* 1800 BC enduring for at least several centuries (Brisset *et al.* 2019).

The Bronze Age of Fars ends in a flurry of site abandonment and fragmentation in ceramic styles at Malyan and in the Kur river basin (Sumner 1994), while the evidence westwards in the Mamasani region is more suggestive of continuing links with Elam into the Iron Age (Petrie *et al.* 2006). Advancing our understanding of the Bronze Age societies of Fars, and of the dynamics of their intra- and interregional interactions through time and space, will require concerted programmes of interdisciplinary investigation embracing large-scale, open-area excavations – as yet, the Tal-e Malyan project is the only one of the entire region that even begins to fit this bill. Much work remains to be done in this key zone of Bronze Age engagement.

Conclusion: a socio-political mosaic in Bronze Age western Iran

In this chapter we have examined a wealth of archaeological evidence from excavation and surveys covering both an extensive timespan, *c.* 2300 years, and a very large region of Iran, including almost all of its western and southern uplands and flanks, complementing our study of the Early Bronze Age Proto-Elamite phenomenon in the previous chapter. To this end we have attempted to trace comprehensible pathways through an otherwise bewildering array of evidence from a vast range of regions and sites. In one regard, this wealth of evidence for the Bronze Age societies of Iran, which we continue to interrogate in the following two chapters, is demonstration in itself of the diversity and vitality of early Iranian society.

Much of this chapter was devoted to investigation of the ETC phenomenon, the major cultural episode of north-western and central-western Iran during the first half of the third millennium BC. The cultural attributes of ETC communities in so far as we can characterise them – back to basics in ceramic technology, low-key architectural scales and styles, eschewing of engagement in transregional trade in raw materials and finished artefacts, a determined focus on specific modes of agro-pastoral food production, a lack of trans-cultural "seepage" with contemporary neighbours – all combine to dissuade us from taking a unilinear view on the *longue durée* of the Iranian past whereby societies developed in predetermined fashion from simple to complex along ineluctable pathways where each step followed naturally from the previous one till we conclude with state-level societies across the entire land. The ETC evidence for low-key, house- and home-based activities including probably cultic and ritual practices centring on hearths and, doubtless, deities of the hearth, reminds us that ideologies can be powerful actors in people's lives, encouraging them to act in specific ways over decades and even centuries, adhering to sharply defined codes of practice and ways of life that might militate against change for change's sake. If so, we need to consider the possible modes of creation and communication of such ideologies in an age without the written word. Oral stories and social histories around the hearth are likely to have been one such mode.

We look forward to further excavation of key ETC sites across western Iran, enhanced palaeo-ecological research and scientific analysis of material and biological remains that will enrich our understanding of this extraordinary phenomenon in so many ways. As one example, the suggestion from human DNA research of an ingression from the Caucasus and the Steppe of new genes into the Iranian population pool at *c.* 3000 BC (Mehrjoo *et al.* 2019) could hardly be more germane to advancing our apprehension of the spread of the ETC phenomenon across Iran and beyond, and we eagerly anticipate further research in this field.

By sharp contrast, the evidence from Luristan through the Early Bronze Age is highly suggestive of outwardly engaged communities active in transregional interactions in almost all directions, as richly attested in the material culture of death and burial, metalwork and ceramics above all. The deposition of so much wealth in many of these tombs hints at firm beliefs in an after-life where such material wealth, doubtless enhanced by perishable items such as textiles and foodstuffs that have not survived in the archaeological record, could be put to good use either by the deceased themselves or by the gods, goddesses and spirits awaiting their arrival. We hope to have demonstrated that the often spectacular tombs and grave goods of Bronze Age Luristan, as also in the Iron Age (Chapter 11), can only be understood within a broad geographical context that highlights the connectivity of these highland communities, that must underpin significant socio-cultural and economic relations between the dwellers of the uplands and their more settled cousins in the cities and villages of the plains.

Moving eastwards from here, and following our brief overview in this chapter of settlement and society in the Fars region of southern Iran, characterised by the ongoing rise of Malyan as the key site of the region, we continue our eastwards track in the next chapter by focusing on the Bronze Age societies of eastern Iran.

9 Iran beyond borders: Bronze Age societies of eastern Iran, 3100–1250 BC

Eastern Iran in its cultural context: interconnected worlds

The third millennium BC is marked by the rise to power across much of Asia of a series of sophisticated states or kingdoms, reaching from Upper Mesopotamia in the west to the Indus Valley in the east and from Central Asia in the north to both shores of the Persian Gulf in the south, characterised by Possehl (2007) as the Middle Asian Interaction Sphere (Figure 9.1) (Kohl 2007: 214–225; Frachetti and Rouse 2012). A major factor in structuring and connecting these geographically dispersed communities was the differential distribution of certain natural resources, highly desired by elite groups in widely separated regions (Vidale 2017). Networks of exchange and communication, including booty-grabbing raids by Mesopotamian and other rulers (T. Potts 1993, 1994: 269–275) as well as more mutually respectful modes of interaction, enabled the flow across much of Bronze Age Asia of materials such as alabaster, chlorite (probably the Mesopotamian "*duhšia* stone": Steinkeller 2006: 2–7), carnelian, turquoise, lapis lazuli, agate and, above all, metal ores, both as raw materials and as finished artefacts artfully constructed from such materials (Weeks 2016). As an example, Michelle Casanova's research demonstrates a dramatic increase in the movement of lapis lazuli across Southwest Asia from the Neolithic to the Bronze Age and the dominance of Mesopotamian urban elites as prime consumers of this luxury material (Casanova 2019: Tables 2–3).

During these centuries the famous great highway of northern Iran, the Great Khorasan Road or Great High Road, later a key component of the Silk Roads (Frankopan 2015), was critical in facilitating the distribution of many of these materials and artefacts (Francfort 2019), underpinning the increase in wealth differentials that more and more come to characterise the burgeoning states and kingdoms across the vast swathes of Central and Southwest Asia in the Bronze Age (T. Potts 1994; Kohl 2007). Traders and craftworkers at the major centres such as Susa, Malyan, Tepe Yahya and Shahr-i Sokhta as well as seasonally mobile upland pastoralists played their part in these exchanges, assisting with the production and transport of commodities and crafted artefacts as well as the transfer of technological developments in ceramics and metallurgy, and doubtless ideologies, belief-systems and socio-cultural practices, in a large-scale engagement reaching from Southwest Asia to China (Kohl 2007, 2011; Mei and Rehren 2009; Frachetti *et al.* 2010; Frachetti and Rouse 2012: 698–699; Mutin *et al.* 2017a). Accompanying these transregional interactions through the millennia and often across challenging terrain, we can also track such critical developments as the eastwards spread of animals and crops such as domesticated pigs and cattle, and wheat and barley (Liu *et al.* 2017) in their centuries-long dispersal from core zones of domestication in the Neolithic of the eastern Fertile Crescent (Chapter 5), matched by a westwards spread of animals such as zebu cattle, plausibly associated with climatic adversity (Matthews 2002a; Frantz *et al.* 2020), and water buffalo (Potts 1997: 257–259).

Much of this trade and exchange was stimulated by elite desire for luxury materials and high-status objects to enable elites to indulge in conspicuous displays of wealth in life and in death (Casanova 2019). In the west, newly emergent urban elites of the Lower Mesopotamian plains were fundamental in driving the development of trade from the mid-third millennium BC onwards (Van De Mieroop 2002). Following the collapse of the Late Chalcolithic Uruk/Late Susa II world at *c.* 3200/3100 BC (Chapter 6), the nascent urban communities of Lower Mesopotamia largely disengaged from interregional interaction for several centuries, with little written or artefactual evidence for movement of valued commodities into Lower Mesopotamia until the mid-third millennium BC. From *c.* 2600 BC the pace of interregional engagement, including imports of objects such as chlorite vessels, lapis lazuli and carnelian beads, gold, silver and other metals, dramatically increased as richly attested in contexts such as the Royal Cemetery of Ur (Zettler and Horne 1998), accompanied by the first evidence for royal palaces and for secular kingly authority at major cities across Mesopotamia (Marchesi and Marchetti 2011; Matthews and Matthews 2017). At the same time, there is a resurgence in Mesopotamian textual evidence for engagement with foreign lands, peaceably or otherwise. With the rise to power of the Akkadian dynasty from *c.* 2350 BC, these

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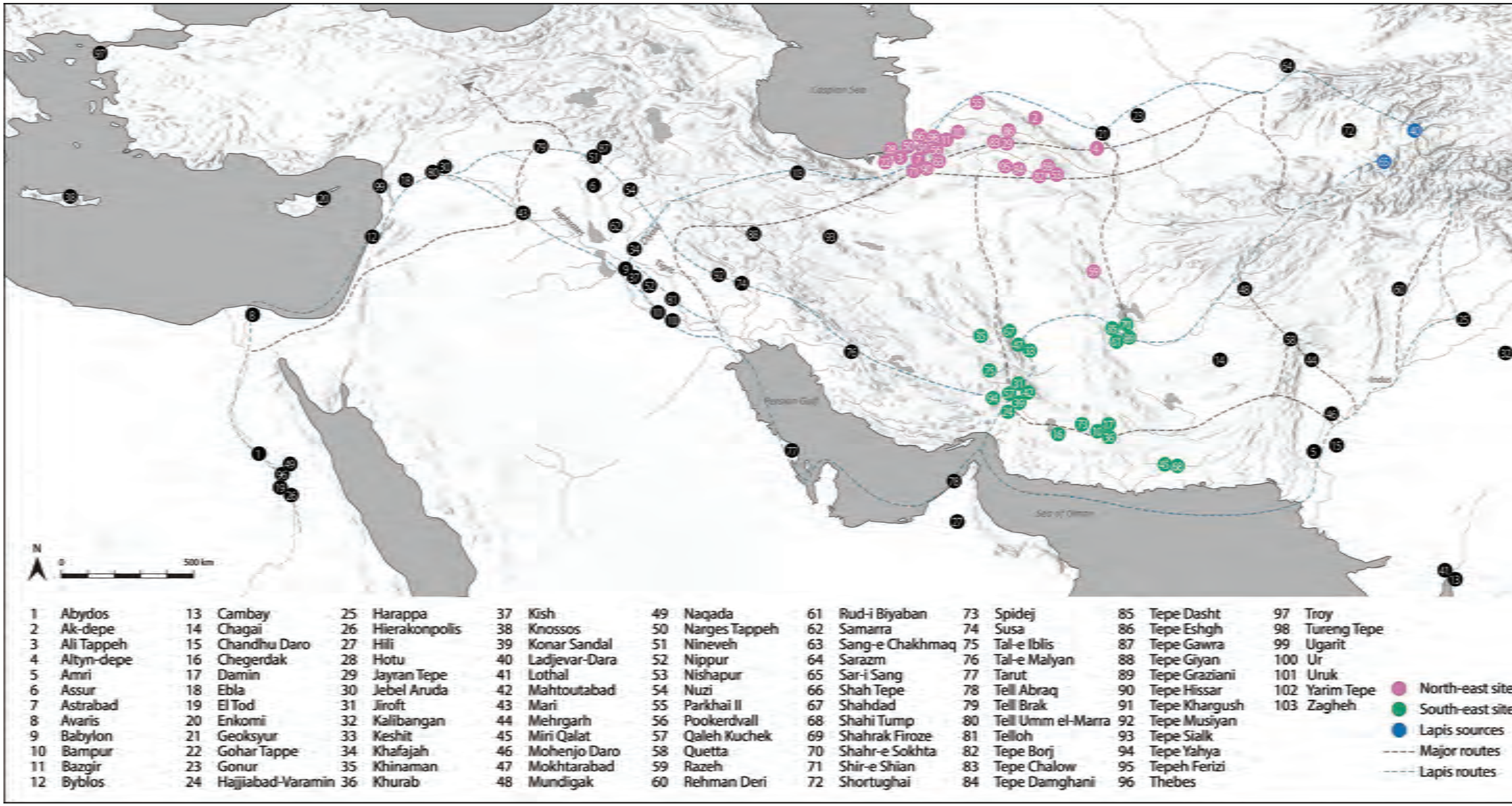

Figure 9.1 Map of Iran and Middle Asia to show major cultural regions, sites and routes.

interactions were further enhanced by a significant expansion of maritime trade along the Persian Gulf with Omani copper of special importance in this regard (Edens 1992; Weeks 2016).

The eastern perspective on highland Iran through the third millennium BC is equally distinctive (Salvatori 2008; Vidale 2018a), whereby the evidence suggests relatively low-level movement of materials and finished artefacts between the societies of eastern Iran and their contemporaries in Baluchistan and the Indus Valley to the east through the early third millennium BC, likely "to reflect sporadic trade contacts, individual trips or marriages rather than systematic, specialized forms of long-distance trade" (Cortesi *et al.* 2008: 29). But from about 2500 BC the most abundant source of evidence for eastern imports into eastern Iran, the excavated site of Shahr-i Sokhta in Sistan (see below), shows a significant shift in the type of imported materials from domestic items such as ceramics and mousetraps (!) in period II to more elite, status-oriented items such as beads of chlorite, ivory and carnelian as well as shell inlays and gaming pieces in period III (Cortesi *et al.* 2008). This surge in eastern elite engagement involving the resource rich societies of highland Iran neatly mirrors the revival of western, Mesopotamian, attraction to Iran discussed above. Cleary Iran had much to offer to the thriving elite-driven societies of the Bronze Age world, as both provider and consumer of high-quality materials and artefacts.

Emblematic of this transregional connectivity is the so-called Intercultural Style (Kohl 1978; Lamberg-Karlovsky 1988; Aruz 2003; Ascalone 2008; Vidale 2021) attested on carved soft-stone bowls and other artefacts with depictions of combatant snakes, bulls and eagles, an integrated repertoire of iconography Possehl and others (Winkelmann 2005; Kohl 2007; Possehl 2007; Francfort 2019) interpret as signifying shared systems of belief. Critical analysis by Holly Pittman (2018a) of carved objects of "dark soft stone" confirms an interpretation of the Halil Rud region of Kerman (see below) as the sole production location for objects of carved chlorite, supporting a renaming of the Intercultural Style to the "Jiroft Type." But we should be careful not to overestimate the volume, intensity and significance of trade and exchange amongst the Bronze Age societies of eastern Iran and its neighbours, represented as they are by generally modest quantities of elite commodities and finished artefacts (T. Potts 1994; T. C. Wilkinson 2012). The vast majority of high-quality production in eastern Iran, certainly of lapis lazuli and chlorite, appears to have been above all for consumption by local elites with relatively minor amounts destined for export (Vidale 2018a: 278, 2021). We should also avoid the temptation to interpret the sites and societies of Bronze Age Asia through the lens of simple core-periphery dialectics, with dominant central regions asymmetrically engaging with less advanced peripheries, heeding instead Philip Kohl's portrayal (Kohl 1987: 16):

> the Bronze Age world system of the late third and early second millennia B.C. was characterised not by a single core region linked to less developed peripheral zones, but by a patchwork of overlapping, geographically disparate core regions or foci of cultural development, each of which primarily exploited its own immediate hinterland.

The Bronze Age societies of eastern Iran clearly did not develop in isolation but rather within a matrix of ebbing and flowing "interaction spheres" (Lamberg-Karlovsky 1972; Lamberg-Karlovsky and Tosi 1973; Dittmann 2002; Franke 2002; Cortesi *et al.* 2008; Beaujard 2011; Mutin 2013a: 218–219), where "the distribution of artefacts stand as proxies for cultural interaction" (Lamberg-Karlovsky 1985: 58) and where the interpretive emphasis is placed upon the dialectic between interaction spheres rather than on a concern to characterise them as either "core" or "peripheral." Amongst their many engagements, explored in detail below, connections with Mesopotamia to the west are well attested in archaeological and textual evidence (Guichard 2021). In the textual evidence, almost entirely from Mesopotamian sources, three key place names stand out: Aratta, Marhashi and Shimashki. The location of all these places is variably contested (Schrakamp in press).

Mesopotamian references to **Aratta** from the mid-third millennium BC onwards feature in narrative epic poems such as "Enmerkar and Lugalbanda" and "Enmerkar and the Lord of Aratta" where Enmerkar lays siege to the city of Aratta, having passed through Susa and the mountain lands of Anshan (T. Potts 1994: 90–91). In these poems Aratta is especially associated with materials exotic to the Sumerians, including gold and silver and, above all, lapis lazuli. These clues have inspired attempts to locate Aratta as a place somewhere in the east, including the Caspian Sea shores (Herrmann 1968), Kerman (Majidzadeh 1976), Badakhshan (Sarianidi 1971) and Shahr-i Sokhta (Steinkeller 1982; Vallat 1985), amongst others (T. Potts 1994: 13–14; Lazzari and Vidale 2017: 55–58). Since Aratta is not mentioned as a place in any Sumerian administrative texts (Alster 1973; Vanstiphout 1983), however, most scholars prefer to characterise Aratta as "a mythological invention" (Michalowski 1986: 133, 1988), a "purely fantastic concept" (Steinkeller 2006: 2), and as a "Sumerian El Dorado" (Moorey 1993). Stressing the elite-serving role of Aratta within the political ideology of the Ur III state in the late third millennium BC (Chapter 10), Potts (2004a: 6) articulates how "Aratta partakes of one reality only, a literary reality concocted to celebrate a brutally powerful political dynasty's links to the ancient and very real city of Uruk."

The toponym **Marhashi**, equating with Barahshum/Parahshum in Akkadian, features as the most significant foreign state in Mesopotamian texts through the period 2300–1750 BC, denoting an exotic region providing plants, special stones and animals such as dogs, sheep, bears, monkeys, elephants and zebu (T. Potts 1994: 27–30; Potts 2002, 2004a; Lamberg-Karlovsky 2013: 571). Mesopotamia-Marhashi relations alternated between hostility and mutual respect. The Akkadian king Rimush, in an inscription carved on a soft-stone bowl, boasts of his role as "slayer of Elam and Marhashi" (Steinkeller 1982: 254; Sallaberger and Westenholz 1999: 42; Potts 2016: 93–94), while one of the five Ur III kings, Shulgi, gave his daughter in marriage to a prince of Marhashi and ambassadors from Marhashi are attested at the Ur III site of Puzrish-Dagan in Mesopotamia in year 46 of Shulgi's reign (Potts 2016: 127–128).

Most authorities situate Marhashi in eastern Iran, either as far east as Iranian Baluchistan (Vallat 1985, 1991) or, now most plausibly in view of discoveries discussed below, in the region of eastern Kerman including Tepe Yahya and the Halil Rud/Jiroft area (Steinkeller 1982, 1989, 2006, 2014b, 2018; Potts 2004a; Kohl 2007: 230). An alternative identification of Marhashi with the Bactria-Margiana or Oxus civilisation of Central Asia (Francfort and Tremblay 2010; Francfort 2019) has received little support. Localisation of Marhashi as including the Halil Rud region would confirm the close association between Marhashi and the region of Makkan (coastal Oman), with Makkan acting as a transit zone in the transregional trade in chlorite vessels and other eastern materials such as carnelian and lapis lazuli for shipment westwards to Mesopotamia. This relationship is attested in ceramic affiliations between the areas of the Halil Rud and coastal western Oman, with indications that a cadre of potters travelled from south-eastern Iran across the Persian Gulf to Oman, taking their distinctive potting methods with them (Potts 2005b).

As to **Shimashki** (Stolper 1982; T. Potts 1994: 30–34), various attempts at localisation have included northern Kerman province including Shahdad (Vallat 1985, 1991), the entire region from Fars to the Caspian Sea (Zadok 1991) and the Oxus civilisation or the Bactria-Margiana Archaeological Complex (BMAC) (Potts 2008, 2016: 94). Steinkeller (2007: Figure 1; 2014a, 2014b) situates Shimashki as covering much of the Iranian Zagros region as far south as Esfahan, while pointing out that for the inhabitants of Mesopotamia Shimashki was used "as a general inclusive designation of the various polities scattered over the Iranian plateau" (Steinkeller 2014b: 698). The precise localisation remains undecided but in seeking to pin down such toponyms on the ancient maps we should heed the caution of Lamberg-Karlovsky (2013: 573, italics in original):

> To identify political entities within specific geographical locales casts a political centrality over a far more complex and autonomous cultural complexity. Additionally, identifying the name of any of the above places has, to date, offered virtually no understanding of the indigenous social, religious, economic, and *political* structure(s) of the named region.

South-eastern Iran in the Bronze Age

Some of the most exciting and tantalising discoveries of Iranian archaeology relate to the Early Bronze Age of south-eastern Iran. In this region, complex city-state and arguably state level societies developed through the third millennium BC, drawing on the area's rich natural and mineral resources as foundation for transregional networking through trade, warfare, alliance and other modes of interaction. For a millennium or so these polities exercised control over their hinterlands and over routes of communication and trade stretching well beyond the borders of modern Iran, eastwards into Pakistan and Afghanistan and westwards across Iran to Lower Mesopotamia (Mutin 2017; Pittman 2017). But south-eastern Iran is a challenging environment, with a topography ranging from fertile alluvial valleys, augmented by springs, to forbidding mountains rising over 4,400 m. The region's climate is highly seasonal, with hot, dry summers and cool, dry winters (Fouache *et al.* 2005; Mashkour *et al.* 2013). Summer months also feature extremely hot, dry winds that can blow for up to 120 days attaining speeds of 120 km per hour and reconfiguring the landscape as they do so (Mortazavi *et al.* 2015). Variable levels of rainfall render the area's settlement especially prone to fluctuations in precipitation, and it is not a coincidence that a globally attested episode of aridity in the later third millennium BC saw the decline of the region's major states along with evidence for massive regional abandonment by the early second millennium BC. Against its climatic and topographic challenges, the region's uplands host rich deposits of minerals, stones and metals that underpinned extensive craft activity and trade networks through the third millennium BC in what Amiet (1986c) characterised as *L'âge des échanges inter-iraniens*.

South-eastern Iran is bounded by major topographic features. To the southwest, the southern extremities of the Zagros ranges peter out around Hormuzgan, allowing a strip of coastal plain at Bandar-e Abbas and Minab before the mountains resume their eastwards march through Baluchistan and on to the Makran range of Pakistan. To the north and northwest, the barren Dasht-e Lut forms a natural boundary (Figure 9.2), along the edges of which sit the modern towns of Kerman and Bam, and the ancient site of Shahdad, with more productive lands directly to the west and south. The regions surrounding the Jazmurian depression, at 300 m, are the most fertile and archaeologically rich zones in south-eastern Iran, watered by the Halil Rud flowing from the north-western highlands into the Jazmurian oasis, with the Rud-e Bampur joining the oasis from the Makran range to the east

Figure 9.2 View of Dasht-e Lut (photo credit: Xavier Dealbert, iStock 1300518012).

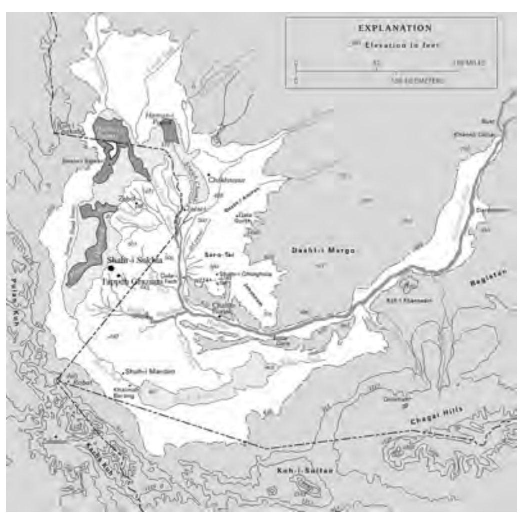

Figure 9.3 Map of Helmand river and location of Shahr-i Sokhta (image courtesy of Massimo Vidale).

and forming the main route of east-west communication in this region. Both the Halil and Bampur river systems hosted rich Early Bronze Age occupation, as we shall see. To the north, the region of Sistan includes the large Helmand basin, into which the Helmand river debouches from its Afghan origins (Figure 9.3), yielding the waters that sustained the major site of Shahr-i Sokhta amongst others.

In contrast to the Bronze Age urban states of Mesopotamia and Khuzestan, or indeed of the Indus and Egypt, who enjoyed easy access to the sea, either directly through propinquity or indirectly through navigable ocean-reaching rivers, many of the complex polities that developed across Bronze Age Iran can be characterised as "oasis riverine systems" (Pittman 2019), in the sense that they developed alongside major rivers that did not reach the sea but instead drained their waters into inland swamps, marshes and ultimately the bleak sand and salt deserts that constitute so much of the inner Iranian land mass. Dependable availability of water was especially critical for oasis riverine systems, with more limited options for radical adaptation in the face of drastic fluctuations in water supply. For the city-states of Lower Mesopotamia, a major avulsion of the Tigris-Euphrates complex would have been a challenging but by no means fatally damaging circumstance to negotiate, as they often did (Jotheri *et al.* 2018). A major shift in river behaviour within an oasis system would be more likely to lead directly to devastating consequences for dependent settlements (Fouache *et al.* 2021).

A classic example is the Helmand river, which flows broadly south-westwards from its source in the Afghan uplands before debouching into the Helmand basin where the great site of Shahr-i Sokhta is located. Another Bronze Age oasis riverine system is found at the western edge of the Dasht-e Lut where the site of Shahdad and its satellite villages lie on an alluvial fan deposited by waters flowing from the mountains to the southwest, while further south the rivers Halil and Bampur flow from opposing directions to empty into the Jazmurian basin at the fringes of which sit the sites of the Jiroft and Bampur regions, all examined below. Well to the north across the Atrak mountains and into southern Turkmenistan a major Bronze Age oasis riverine system developed in the later third millennium BC along the waters of the Amu Darya, or Oxus river, known as the Bactria-Margiana Archaeological Complex (BMAC), the Oxus Civilisation, or the Greater Khorasan Civilisation (Vahdati *et al.* 2019; Lyonnet and Dubova 2021). All these Bronze Age oasis riverine systems demand close study both on their own terms but also as interacting components of transregional networks of engagement that are vividly attested in the surviving material remains, as partially excavated, analysed and published by generations of archaeologists. That said, we should bear in mind that much of the trade and exchange between the inland societies of south-eastern Iran and their contemporaries in Mesopotamia must have taken place by sea traffic, with the relatively open valley of the Minab river providing a convenient corridor connecting the Halil Rud and regions beyond with the coast of the Persian Gulf at Minab (T. Potts 1994: 36–39; Pfälzner and Soleimani 2015). This route was doubtless a major highway for third millennium BC engagement between south-eastern Iran and Lower Mesopotamia.

Overall, south-eastern Iran has not benefited from archaeological investigation to the extent enjoyed by western and northern Iran. Pioneering explorations in south-eastern Iran and north-western India (as it then was, now Pakistan) were conducted by Sir Aurel Stein (1934, 1937) who located scores of Early Bronze Age and other sites. This work was followed by major projects at Tepe Yahya, Tal-e Iblis, Shahdad and Shahr-i Sokhta, amongst others, through the 1960s and 1970s as detailed below. More recently, archaeological surveys of the Jiroft region of the Halil Rud (Madjidzadeh 2003; Pittman 2013a) the region to the south of Jiroft (Pfälzner and Soleimani 2015; Pfälzner *et al.* 2019) and the western Dasht-e Lut (Eskandari 2019) have been conducted by Iranian and other archaeologists.

Spectacular florescence: Early Bronze Age archaeology of the Halil Rud and Kerman region

In Chapter 6 we traced the development of Chalcolithic societies in south-eastern Iran, while in Chapter 7 we examined the evidence for Proto-Elamite influence of the region, especially at Tepe Yahya. What happened next? The major Proto-Elamite occupation of Tepe Yahya, level IVC2, was abandoned early in the third millennium BC and the site appears to have been unoccupied for up to 500 years, with level IVB tentatively dated to 2600–2400 BC (Mutin 2013a: 190; Pittman 2013a: 307). Other sites of south-eastern Iran fill in some of this gap, including Konar Sandal South and Shahr-i Sokhta, but regional surveys have failed to find significant numbers of sites contemporary with Yahya IVC2, i.e. the Proto-Elamite or Early Bonze Age I period, *c.* 3100–2900 BC (Pfälzner *et al.* 2019: 113), fitting with the overall Proto-Elamite settlement picture across Iran of concentrations of activity in limited numbers of focal nodes (Chapter 7).

Modern illicit looting of Bronze Age cemetery sites in the region south of **Jiroft** along the Halil Rud brought vast numbers of decorated stone and metal artefacts onto the market, hundreds of which were recovered by the Iranian authorities and are now displayed in Kerman Museum, the Archaeological Museum of Jiroft and the National Museum of Iran (Figure 9.4) (Madjidzadeh 2003; Perrot 2003; Perrot and Madjidzadeh 2003; Piran 2019; Eskandari *et al.* 2020b). Many of these items are of the Jiroft Type (Pittman 2018a), in the form of carved soft-stone vessels, as well as more unique zoomorphic statues, handled "weights" or "handbags" (Muscarella 1993, 2001, 2012a; Aruz 2003: 328–329), plaques or gaming boards (Dunn-Vaturi and Schädler 2006), inlaid footed goblets, lapis lazuli amulets, bronze vessels decorated with high relief and items manufactured of diatomaceous limestone. Some of the forms and iconography suggest connections with BMAC sites such as Gonur-depe in southern Turkmenistan (Kohl 2007: 227; Salvatori 2010; Francfort 2019) but most are in local style and produced locally in the Halil Rud region or at contemporary sites such as Tepe Yahya to the southwest. Particularly striking is an elaborate copper or bronze staff, 90 cm long and decorated with shell inlays, made with the lost-wax casting process, which has provisionally been interpreted as a "royal sceptre" and was probably originally deposited in a high-status grave of mid-third millennium BC date (Figure 9.5) (Eskandari *et al.*

Figure 9.4 Kerman Museum, display of Jiroft objects (photo credit: Roger Matthews).

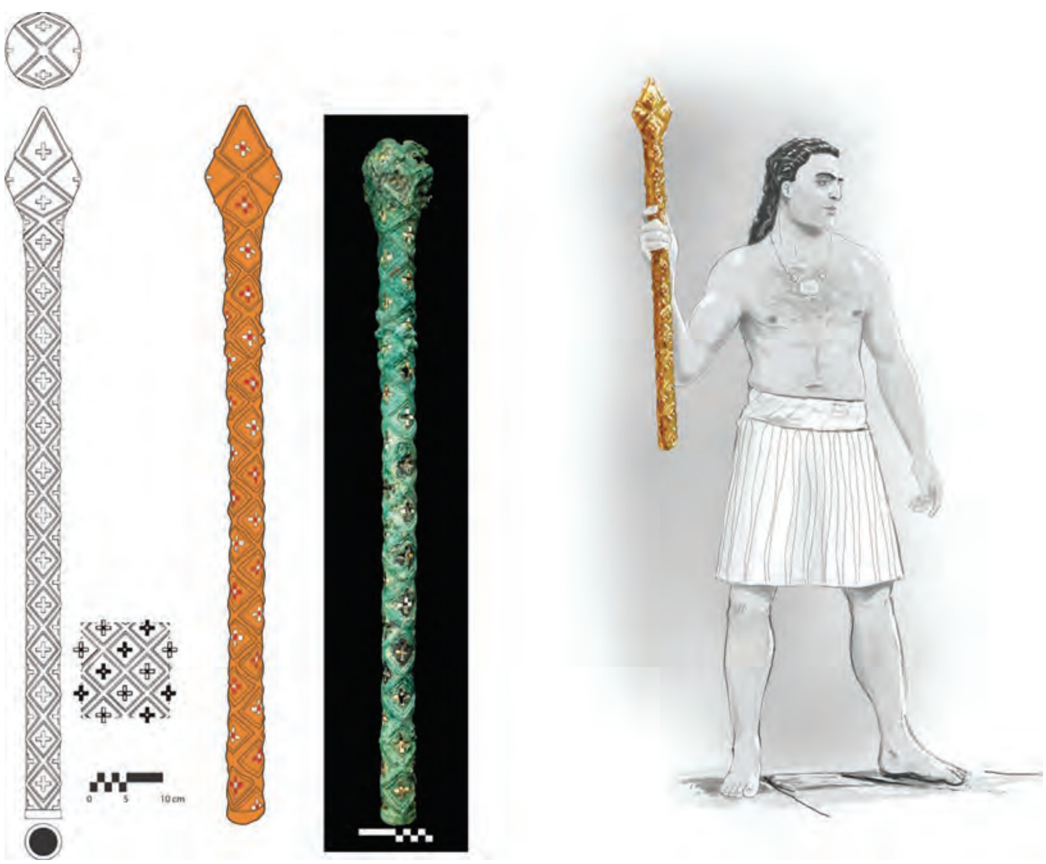

Figure 9.5 "Royal sceptre" from Jiroft region (Eskandari *et al.* 2020b: Figures 2–4) (images courtesy of François Desset).

2020b: Figures 3–4). It has parallels with items from graves at Shahdad (see below), Gonur-depe and other sites across Middle Asia (Eskandari *et al.* 2020b). All this spectacular material, largely unprovenanced beyond a broad association with the Jiroft region, attests an extraordinary flourishing of iconographic expression replete with pregnant symbolism and of transregional appeal and significance to contemporary societies near and far.

Intricate investigation of looted Early Bronze Age tombs (Figure 9.6) extending over an area of at least 6 ha at the sites of **Mahtoutabad** on the banks of the Halil Rud suggest that there may originally have been at least 1,000 graves of 2600–2200 BC date in this region, most of them containing valuable objects including carved soft-stone vessels, bronze objects, painted ceramics, and beads of lapis lazuli, carnelian and other materials (Desset

Figure 9.6 Mahtoutabad, aerial view showing multiple looter pits (Desset *et al*. 2017: pl. 2) (image courtesy HARP project).

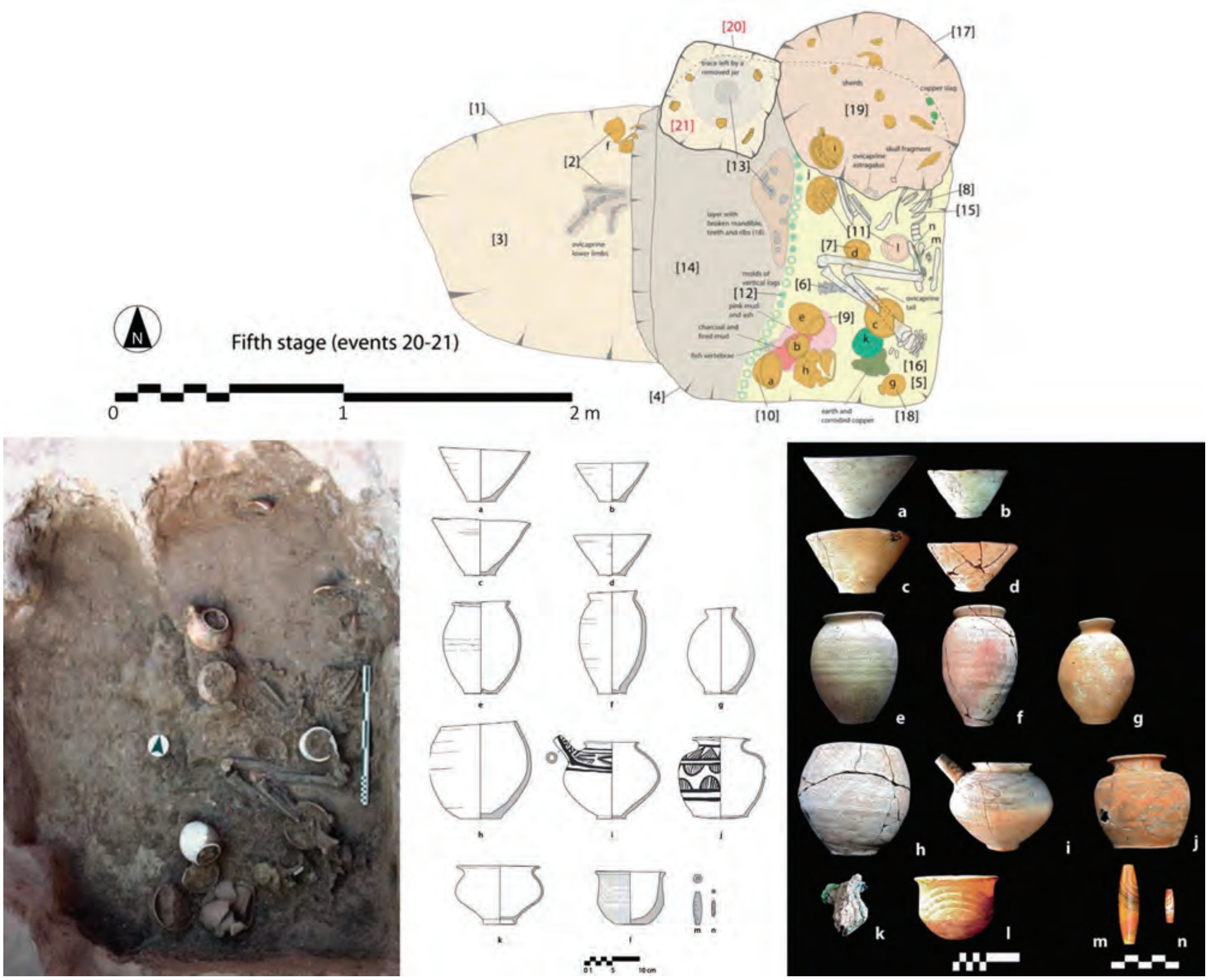

Figure 9.7 Mahtoutabaad, Grave 2, view, plan and grave goods (Desset *et al*. 2017: pls 6, 12, 14–15) (images courtesy of François Desset).

et al. 2013). Meticulous excavation and recording of one undisturbed tomb enabled reconstruction of a complex sequence of events associated with the burial, including excavation of a vertical shaft, offerings of food and drink (to the underworld deities?) at the opening of the shaft, excavation of a mortuary chamber, placing of a mat on the chamber floor, insertion of the grave furnishing and the body, deposition of grave goods, and subsequent post-burial activities (Figure 9.7) (Desset *et al.* 2017: pl. 7). Surface survey and excavations at the extensive cemetery and craft-working site of **Hajjiabad-Varamin**, located only 8 km southwest of Mahtoutabad (Figure 9.8), indicate prolonged use of this location over many centuries, climaxing in the mid-third millennium BC with evidence for crafting of vessels from a range of stones (Figure 9.9) probably for local consumption, and for hoarding of distinctive copper artefacts (Figure 9.10) (Eskandari *et al.* 2020a, 2021).

In so far as we are able to treat the Jiroft objects as a coherent assemblage uncontaminated by forgeries (Muscarella 2001), the vivid and highly structured iconography of the carved soft-stone artefacts of the Jiroft region relate to local and possibly transregional myths and epic narratives rooted in cosmological principles concerning cycles of life and death and human-nature entanglement (Winkelmann 2005; Perrot 2012; Vidale 2015; Francfort 2019). Thus, one extraordinary scene cut into a tall vase showing opposed zebu bulls held at the dewlap by a reclining human while a standing skirted human holds up a rainbow (or a stream?) with the sun and the moon represented nearby is interpreted by Jean Perrot (Figure 9.11) (Perrot and Madjidzadeh 2003: 110) in terms of a world vision:

> Réduit à ses propres forces, l'Homme élève les bras vers la voûte céleste ou vers quelque arc-en-ciel, flanqué des symboles du Soleil et de la Lune. Cette scène…apparaît comme une parfaite illustration d'une situation dans laquelle la société humaine grandissante aspire à un ordre comparable à celui que de longue date elle a observé dans le ciel.

In the depicted scene, zebu bulls serve as emblems for wild nature that has been tamed, a powerful force brought into the nurtured human world, decorated with tassels and held calmly by the throat as part of a grand human-nature

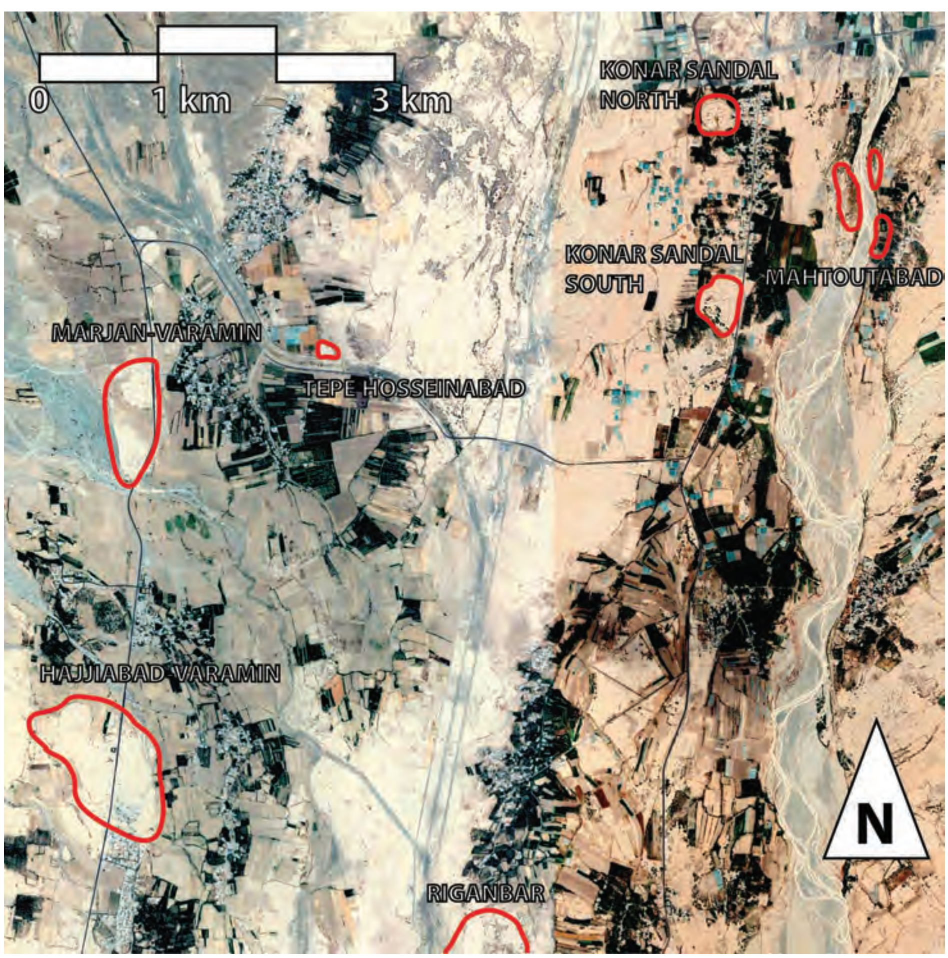

Figure 9.8 Hajjiabad-Varamin location map (Eskandari *et al.* 2021: Figure 2) (image courtesy of Nasir Eskandari).

Figure 9.9 Hajjiabad-Varamin, surface collection of selected worked stones (Eskandari *et al.* 2021: Figure 26) (photo credit: Nasir Eskandari).

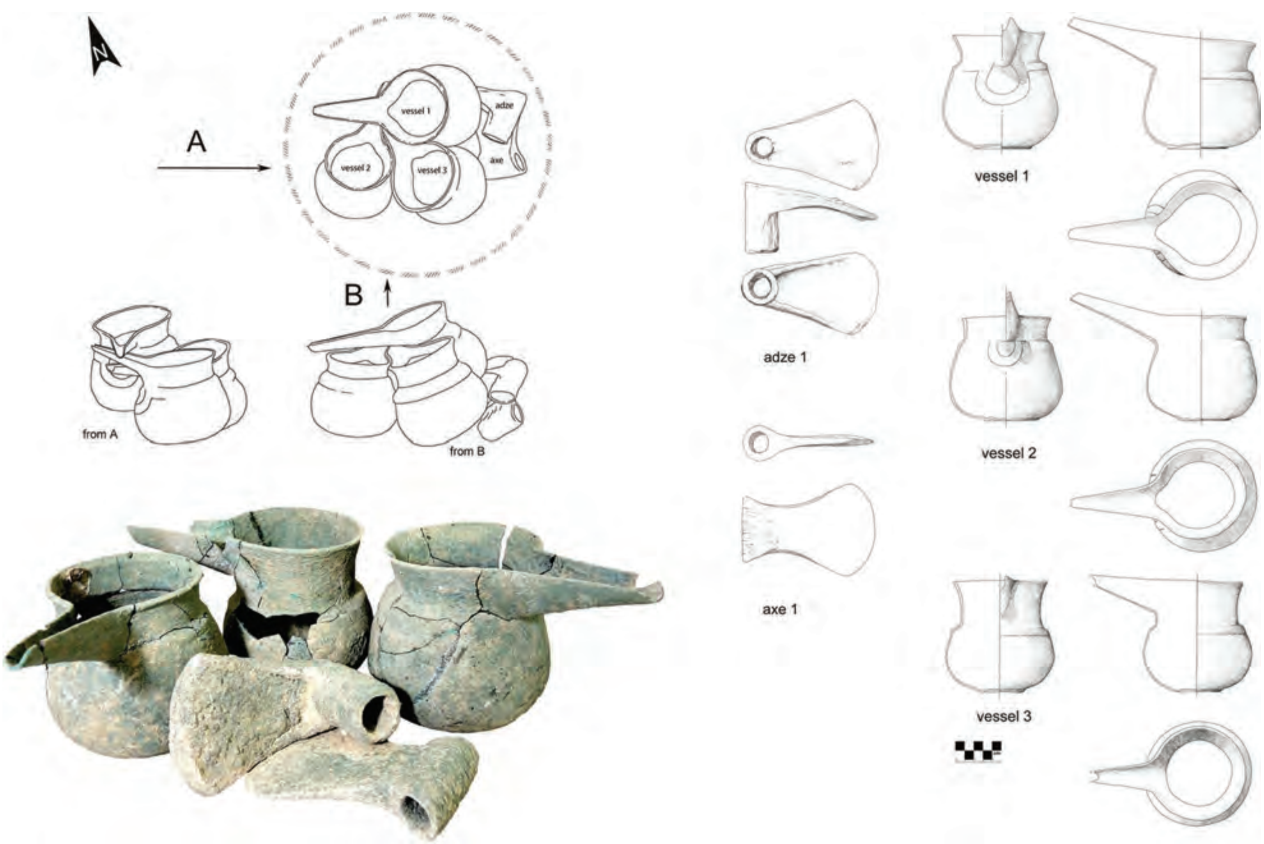

Figure 9.10 Hajjiabad-Varamin, hoard of copper artefacts (Eskandari *et al.* 2021: Figures 29–30) (image courtesy of Nasir Eskandari).

vision. Other frequent carved and modelled motifs, often with eyes and other features inlaid with coloured stones, include the tree of life, palm trees, eagles, goats, possible oryx (Figure 9.12) (Devillers 2013), panthers, lions, scorpions and snakes, as well as geometric designs and architectural facades that may represent temples. There appear to be significant associations of specific motifs, and the theme of human control over nature is much to the fore. More specifically, Massimo Vidale (2015: 42; Pittman 2018a) interprets the iconography of the carved Jiroft chlorite artefacts as representing narratives of myths and legends, including a possible flood story, that

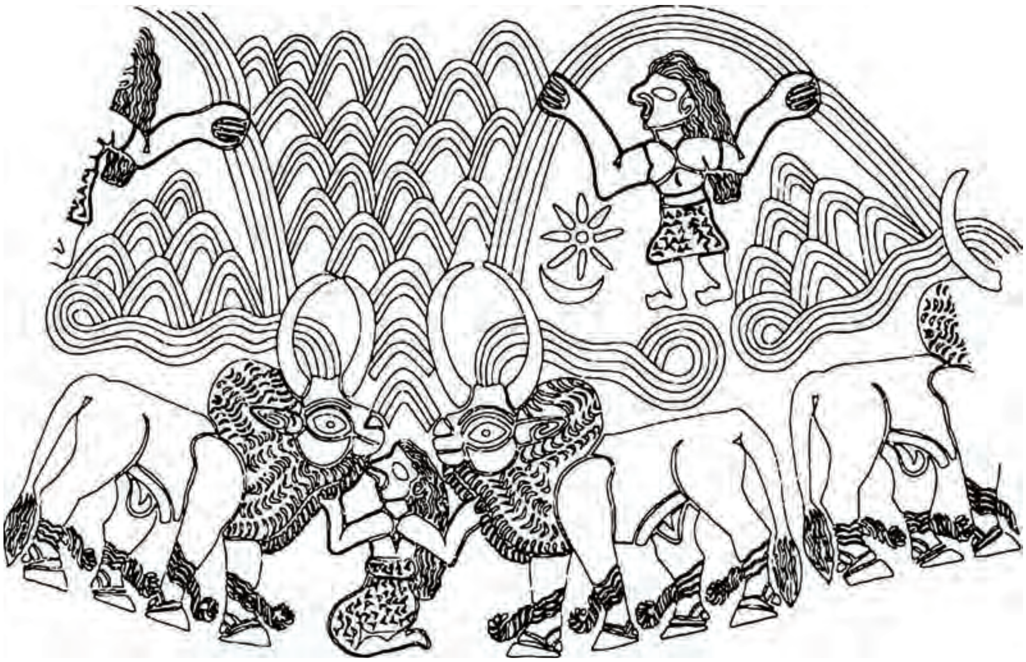

Figure 9.11 Jiroft, chlorite vessel with carved and inlaid scene (after Madjidzadeh 2003: 13–14).

Figure 9.12 Jiroft, chlorite vessels depicting possible Oryx (after Madjidzadeh 2003: 24–26, 32–33; Devillers 2013: Figures 7–8, pls 3–4).

connected this region of Iran with the world beyond, from Mesopotamia in the west to Central Asia in the east: "At least in part, the images should be interpreted in the context of lost funerary ideologies and rituals, and of a pre-existing oral tradition deeply rooted also in the prehistory of the Iranian Plateau."

Similarly decorated and inlaid soft-stone vessels and objects, with "Master of Animal" motifs and comparably executed depictions of snakes, zebu, lions and eagles feature in Joan Aruz's (2003) sumptuous publication of "Intercultural Style" chlorite objects, most commonly from Mesopotamian temples, as at Kish, Nippur, Khafajah and Mari, or, sadly, with no known provenance (Pittman 2018a). A great number have also been excavated from stone-lined tombs on the small island of Tarut northwest of Bahrain on the south shores of the Persian Gulf (Zarins 1978; Aruz 2003: 325–328; Kohl 2004).

The recovery of the looted objects from Jiroft and the international interest stimulated thereby (Lawler 2003, 2010) led to a programme of survey and excavations south of Jiroft led by Yousef Madjidzadeh with international colleagues (Madjidzadeh 2003; Madjidzadeh and Pittman 2008). While early claims for discovery of "the earliest

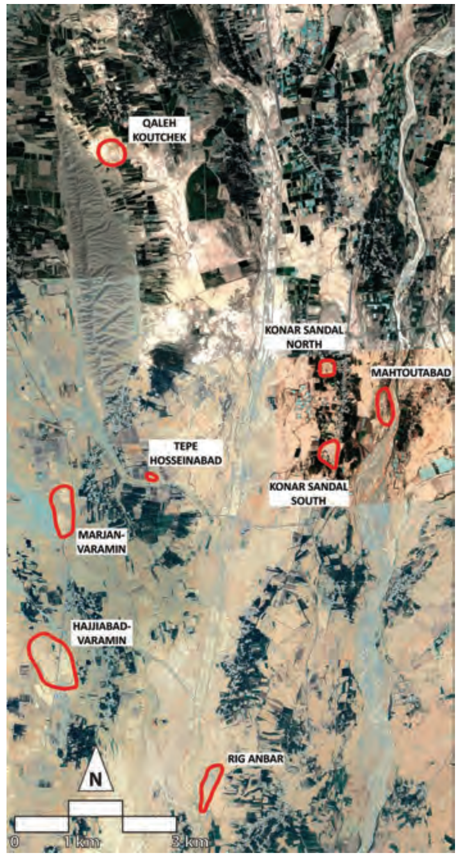

Figure 9.13 Halil Rud valley, key sites (image courtesy of François Desset).

Figure 9.14 Halil Rud valley, date palm grove (photo credit: Roger Matthews).

Oriental civilization" or the mythical state of Aratta (Madjidzadeh 2003; *contra* see Steinkeller 2006: 1–2) have subsided, there is no doubt that the Bronze Age societies of the Jiroft region of the Halil Rud constituted an extremely important complex society competing and connecting with other similarly complex and capable societies of the region and beyond in a rich episode of interregional engagement across considerable expanses of Asia. Indeed, the Jiroft discoveries significantly enhance the region's claim to the historical name of Marhashi (Steinkeller 2006; Kohl 2007: 230; see above). The Jiroft plain lies close to major mountain ranges rising to more than 3,500 m in height and enjoys relatively rich overground and underground water resources (Mashkour and Tengberg 2013). Regional survey of the Bardsir and Halil Rud reveals continuous occupation through most of the third millennium BC, with the major sites of Konar Sandal South and North dominating the Jiroft region (Figure 9.13) (Sajjadi 1987; Fouache *et al.* 2005). In total about 300 tell sites have been surveyed in this region, some of them reaching 100 ha in area, convincing evidence for the density and scale of settlement and activity in this area during the third millennium BC, which has been characterised as “a small Mesopotamia” on account of its climate of hot humid summers and relatively mild winters as well as its agricultural productivity (Figure 9.14) (Muscarella 2012a).

Excavations at Konar Sandal South and Konar Sandal North indicate an expansion of occupation through the third millennium BC, culminating in construction of a high citadel mound at **Konar Sandal South** with an associated Lower Town (Figure 9.15) (Madjidzadeh 2003; Madjidzadeh and Pittman 2008). The earliest excavated phase at Konar Sandal South, Lower Town 1, is dated to Early Bronze Age II (2900–2500 BC) also known as Phase A of the Jiroft Culture. From rubbish deposits in Trench XIV, a clay door-peg sealing with distinctive seal impression was excavated, closely resembling Early Dynastic I seal impressions of so-called “city seal” style from Ur in Lower Mesopotamia (Matthews 1993; Madjidzadeh and Pittman 2008: 100, Figure 32e; Pittman 2012: Figure 1). Identification of the city name of Ur on this seal impression (Figure 9.16) (Matthews and Richardson 2018, 2020: Figure 7; Pittman 2018b) suggests some form of intimate contact between these two distant regions in the early third millennium BC, long before such contacts are evidenced by contexts such as the Early Dynastic III Royal Cemetery of Ur (Zettler and Horne 1998) with its rich finds of gold, silver, lapis lazuli and carnelian attesting Sumerian engagement with south-eastern Iran, including gold representations in sumptuous wreaths and headdress of the leaves of the sissoo tree, native to south-eastern Iran and regions to the east and found in charred wood remains from Konar Sandal (Tengberg *et al.* 2008; Mashkour *et al.* 2013). Pittman (2018b: 34) adroitly summarises the distinctive usages of seals within the context of highland Iran in this period:

> On the Iranian plateau in the Early Bronze, in an environment where writing, if it existed at all, was not used administratively, seals played a vital role in differentiating the various actors who came to central places or markets to acquire, disperse, or exchange raw or semi-processed materials and certainly also finished goods of the types found in the Royal Tombs (of Ur).

The citadel at Konar Sandal South comprises a superimposed sequence of monumental mudbrick structures enclosed within a massive niched and buttressed wall (Figure 9.17), all dated to Early Bronze Age III (2500–2000 BC), Phase B of the Jiroft Culture and partly contemporary with Early Dynastic III in Mesopotamian terms.

Figure 9.15 Konar Sandal South, citadel mound (photo credit: Roger Matthews).

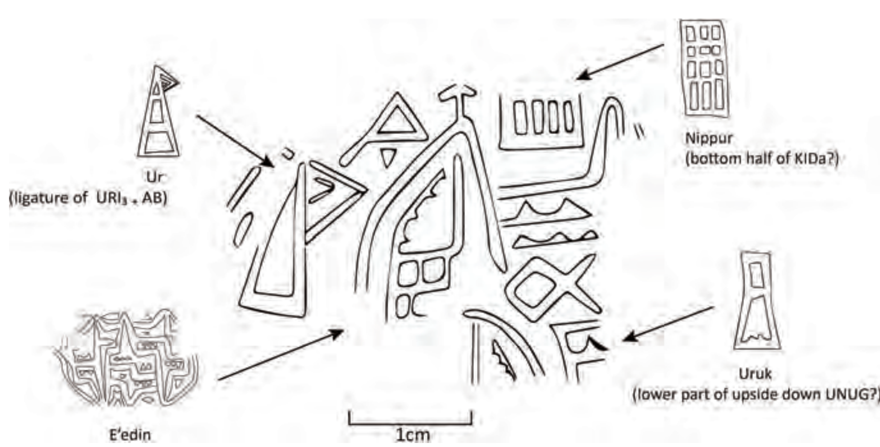

Figure 9.16 Konar Sandal South, “city seal” impression (Matthews and Richardson 2018: Figure 14).

Figure 9.17 Konar Sandal South, citadel enclosure wall (photo credit: Roger Matthews).

Figure 9.18 Konar Sandal South, engaged painted sculpture at citadel entrance (photo credit: Holly Pittman).

Entrance to the citadel was through a gateway with at least one semi-circular tower, plus an anteroom or shrine contemporary with a unique engaged monumental painted sculpture depicting a male skirted and bare-chested figure, possibly a deity, sadly with the head missing (Figure 9.18). Associated with the citadel, the administrative quarter at Konar Sandal South, dated to 2450–2300 BC, yielded large quantities of clay sealings with seal impressions showing affiliations with examples from the Ur Seal Impression Strata, Fara, Susa Ville Royale 18-17, Tepe Yahya, Shahdad and Shahr-i Sokhta II (Ascalone 2013, 2018; Pittman 2013a: 308, 2018b, 2019). Also from this level came a carved chlorite plaque in the form of a scorpion man, and considerable amounts of carved green soft-stone items in the so-called *série ancienne* or Intercultural Style. The craft areas include a large platform and associated rubbish deposits, with thousands of pieces of colourful stones, including agate, jasper and lapis lazuli, as well as used flint drill bits, clearly attesting *in situ* bead manufacture.

The rubbish deposits include many clay sealings, mainly from sealed containers such as bags, baskets, boxes and jars, with typical Lower Mesopotamian Early Dynastic III combat scenes alongside impressions from local-style seals comparable to those from Tepe Yahya IVB and graves at Shahdad. Pittman (2013a: 308, 2018b) interprets the combat scenes as evidence for the presence in the Halil Rud region of Mesopotamian agents engaged in acquiring access to the luxury items desired by the powerful Sumerian elites, as attested above all by the contemporary Royal Tombs at Ur. Contemporary cylinder seals found far to the northeast at Gonur-depe in Turkmenistan are directly influenced by the narrative iconography found on seals and seal impressions at Konar Sandal South and the Kerman region (Pittman 2019). The considerable variety in the iconography of the seals attested on the clay sealings at Konar Sandal South (Figure 9.19) underlines the interregional connectivity of the occupants of the site through much of the third millennium BC, underpinning Pittman's (2019: 284) proposal that representatives of widely dispersed communities across much of Asia were physically present at sites such as Konar Sandal South using their regionally distinctive seals in a process of storing, securing and distributing highly valued commodities such as the semi-precious stones richly attested at the site, in "some kind of merchant-like,

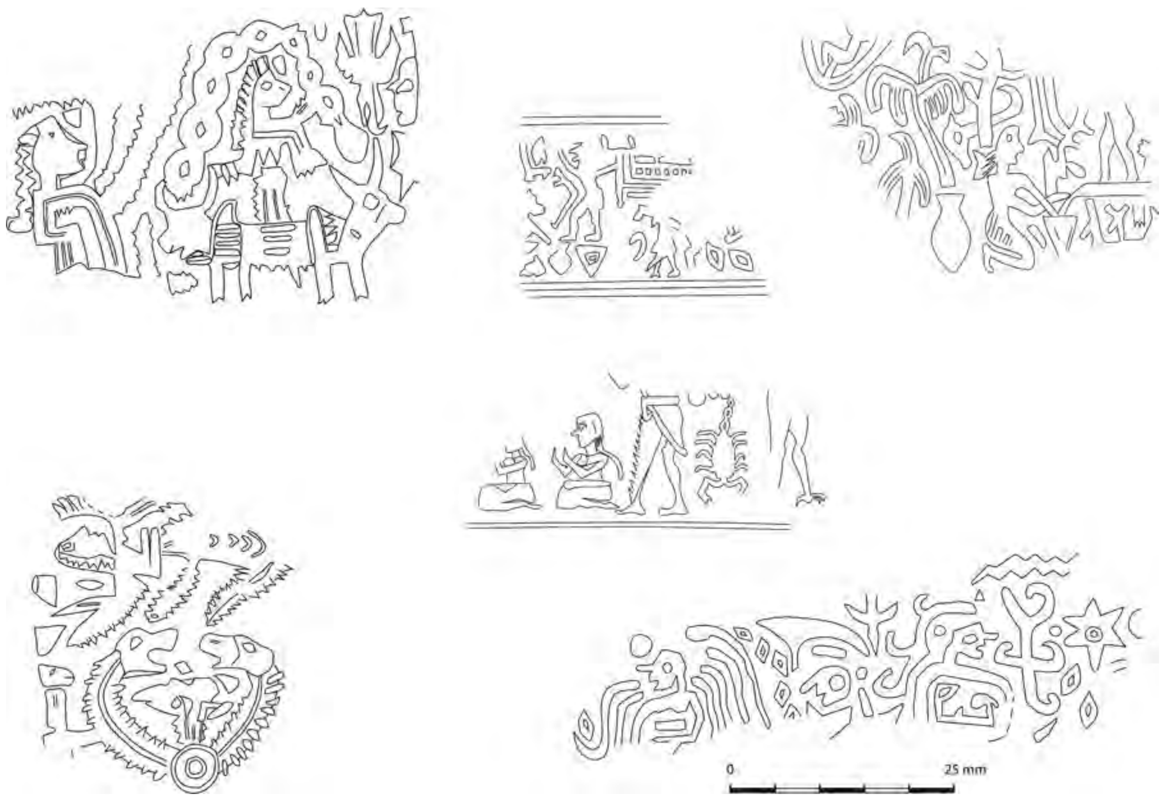

Figure 9.19 Konar Sandal South, seal impressions on clay sealings (after Pittman 2019: Figures 11, 16–17, 21–22, 27).

Figure 9.20 Konar Sandal South, scorpion bowls and canister vessels (Madjidzadeh and Pittman 2008: Figure 24) (image courtesy of Holly Pittman).

commercial, behavior." What remains unclear are the societal mechanisms by which such trade was conducted – did individual traders act solely on their own behalf or were they commissioned by state-level institutions such as temples and palaces to conduct trade, or a combination of both these scenarios? Conspicuous consumption of luxury materials in contexts such as the Royal Tombs at Ur suggests that much of this trade must have involved elite-level supervision and engagement.

Lower Town Phase 2 at Konar Sandal South includes a large domestic complex, craft production areas and an administrative quarter. Distinctive ceramic types include "scorpion bowls" with upturned handles, also found at Yahya IVC and IVB, Bampur II–IV and Shahr-i Sokhta III (Figure 9.20). Vessels are also found in so-called "Emir Ware," common at sites throughout eastern Iran and across the Persian Gulf at Tell Abraq (Potts 2005b). Craft production continued during Lower Town Phase 3 at Konar Sandal South, alongside the construction of massive structures dating into the late third millennium BC. The end of this phase at Konar Sandal South in the

Figure 9.21 Geometric and Linear Elamite texts from Konar Sandal (Desset 2014b: pls 1–2) (images courtesy of François Desset).

late third millennium BC may have been brought about by an earthquake, judging by the volume of overlying collapsed mudbrick (Pittman 2013a: 310), after which the site was largely abandoned.

A fragment of inscribed baked clay was found on one floor (Madjidzadeh and Pittman 2008: 81) during the Citadel Shrine phase. Meanwhile, excavations in a villager's garden, 550 m north of Konar Sandal South, recovered three clay tablets with inscriptions (Figure 9.21). Taken together, these four inscribed items, which are poorly understood, appear to represent intriguing experiments in writing on clay in the Konar Sandal region (Desset 2014b). Three of the tablets include texts in two scripts: (i) an early form of Linear Elamite, conventionally associated with the Elamite king, Puzur-Inshushinak (*c.* 2100 BC; Chapter 10), but apparently pre-dating his reign by up to 200–300 years, if the chronology is correct, and (ii) a completely unrelated script, called "Geometric" by François Desset (2014b: 84). Both these scripts or graphic systems appear to have been locally devised and lacking clear connection to known writing systems previous or contemporary.

Excavations at **Konar Sandal North** have revealed an extensive mudbrick platform on two levels, surmounted by Iron Age deposits. Radiocarbon dating suggests the platform itself may belong to the Iron Age not, as originally assumed, to the Early Bronze Age (Chapter 11). Bioarchaeological remains from the Konar Sandal sites show the community's reliance on herding of sheep and goat with some use of cattle, including rare evidence for zebu, alongside cultivation of barley, wheat, date palm and grapevine (Mashkour *et al.* 2013). Overall, the evidence from the Konar Sandal sites underlines its role as a major centre for interregional engagement in the Early Bronze Age, with ceramic and glyptic materials attesting long-distance contact with Mesopotamia, Central Asia, the Indus Valley and the Persian Gulf (Thornton 2012: 604; Vidale and Frenez 2015; Pittman 2018b). Christopher Thornton's (2012) emphasis on the significance of the cultural connections of the Jiroft region with the rising powers of Dilmun (Bahrain and adjacent Arabian coast) and Magan/Makkan (the Omani Peninsula) in the late fourth and much of the third millennia BC, attested in shared painted ceramic styles (Potts 2005b), lends further support to identification of this area of south-eastern Iran as ancient Marhashi.

With the aim of investigating relations between the Jiroft region and the Persian Gulf coast to the south, systematic multi-period survey in recent years has detected more than 200 archaeological sites, in particular on the plains of Boluk and Faryab and the Middle Halil Rud valley (Pfälzner and Soleimani 2015; Pfälzner *et al.* 2019). Settlement developed especially densely during the Early Bronze Age II-III phases (2900–2000 BC; Figure 9.22), and there is evidence that several sites were focused on control of routes of communication to and from the coast and on processing and trade in chlorite artefacts, including a possible chlorite mining site of Early Bronze Age III date in the Bagh-e Borj mountains (Figure 9.23). Deposits of gabbro stone and travertine in this region were also likely quarried for export to Mesopotamia for use in manufacture of elite statues and stone vessels during the Early Bronze Age (Pfälzner *et al.* 2019: 120). This region appears to be more or less deserted during much of the second and the early first millennia BC, with full-scale reoccupation only in the Achaemenid period (Chapter 11).

Level IVB 4-2 at **Tepe Yahya**, *c.* 2400–2000 BC, hosts a blossoming of carved chlorite vessels and artefacts in the *série ancienne* or Halil Rud/Jiroft Style (Figure 9.24) (de Miroschedji 1973; Kohl 1975, 1978, 2001, 2004;

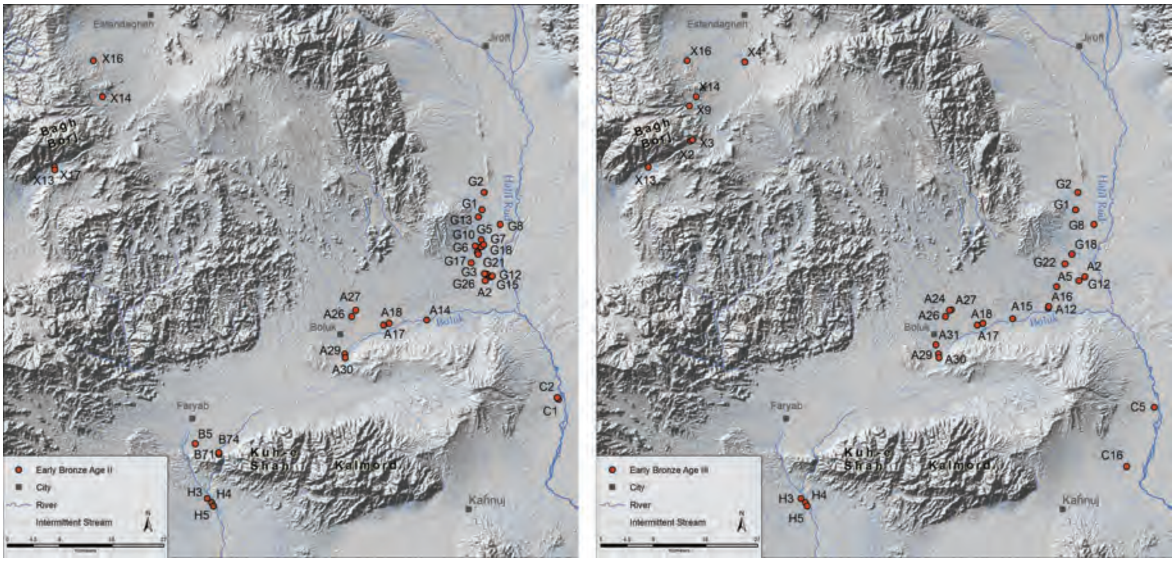

Figure 9.22 Early Bronze Age II and III settlement in the SOJAS regional survey (Pfälzner *et al.* 2019: Figures 7–8) (image courtesy of the SOJAS project, the University of Tübingen).

Figure 9.23 Chlorite outcrop in the Bagh-e Borj mountains (Pfälzner *et al.* 2019: Figure 19) (photo credit: Peter Pfälzner).

Kohl *et al.* 1979; T. Potts 1994: 250–262; Ascalone 2007; Pittman 2018a), as well as developments in metallurgy (Thornton and Lamberg-Karlovsky 2004). There appear to have been open-air workshops at Yahya dedicated to the production of chlorite objects, yielding large quantities of debitage and unfinished items (Potts 2001). Level IVB 1 at Yahya has circular and rectilinear architecture as well as ceramics with parallels in Central Asia, Namazga V, and seals showing the development of a local style less influenced by Mesopotamian iconography (Ascalone 2013: 22, 2018: 632). Analysis of period IVB ceramics from Yahya shows a significant discontinuity from the preceding IVC Proto-Elamite period, with increasing quantities of serpentine and chlorite dust in ceramic pastes resulting from the deliberate inclusion of debris from working of soft stone (Mutin *et al.* 2016: 861).

Evidence from the looted tombs in the Halil Rud, including those at Mahtoutabad discussed above, with more than 700 items confiscated by the Iranian authorities, establishes that the bulk of carved chlorite vessel and artefact production, as attested at Yahya, was for local consumption along the Halil Rud, as indicated by their low representation in excavated tombs either at Shahdad to the north or at sites along the Bampur valley to the east (Kohl 2004: 286; Pittman 2013a: 309). Additionally, about 100 examples of this type of object have been found at mainly temple contexts in Mesopotamia (Kohl 1974, 1975, 1978; Moorey 1994: 46–50; T. Potts 1994; Pittman 2018a) as well as on the small island of Tarut (Zarins 1978). The finished vessels could have travelled either overland via Susa and into Lower Mesopotamia and north-westwards to sites such as Mari (Ascalone 2007, 2019) or by land from the Halil Rud south to the coast at Minab and thence by sea to the head of the Persian Gulf. Kohl's

Figure 9.24 Tepe Yahya, carved chlorite fragments in the Intercultural Style (after Aruz 2003: Figures 242–243).

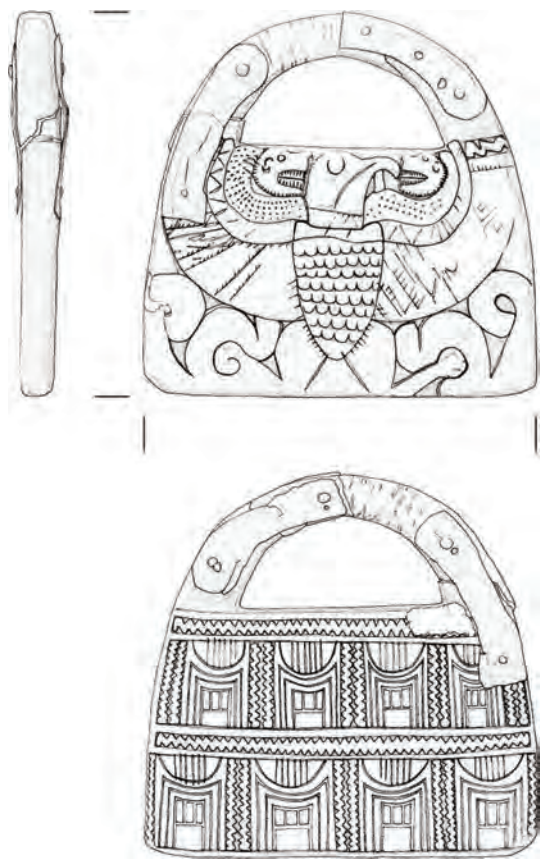

Figure 9.25 Chlorite "handbag weight," National Museum, Tehran (Vidale and Micheli 2012: Figure 1) (image courtesy of Massimo Vidale).

analysis (Kohl 2004; Kohl *et al.* 1979) of soft stone vessels suggests that specific Mesopotamian cities or groups of cities may have obtained their vessels from separate sources, for example at Bismaya (Adab) where vessels were made of steatite rather than chlorite. Strikingly, exported items comprise only open vessels, including uncarved bell-shaped bowls (Kohl 2004: 286), with no representation of the other forms such as goblets, plaques, or sculptures richly attested in the material from the Halil Rud (Figure 9.25) (Vidale and Micheli 2012). Only two so-called "handbag weights" have been found in Lower Mesopotamia, one each at Nippur and Ur, in the latter case as part of a probable foundation deposit for a temple of Inanna (de Miroschedji 1972a; Reade 2002).

The latest Bronze Age occupation at Tepe Yahya, period IVA, the least adequately published of the Yahya levels, is variously dated to 1700–1400 BC (Beale 1986: 11), 1900–1700 BC (Lamberg-Karlovsky 1972; Thornton and Lamberg-Karlovsky 2004: 52) or 2200–1900 BC (Ascalone 2013: 4), with the earlier dates more plausible. Metal objects and the increasing use of tin-bronze in Yahya IVA are indicative of influence on the region from the Bactria-Margiana Archaeological Complex (BMAC) at the turn of the third-second millennia BC (Thornton and

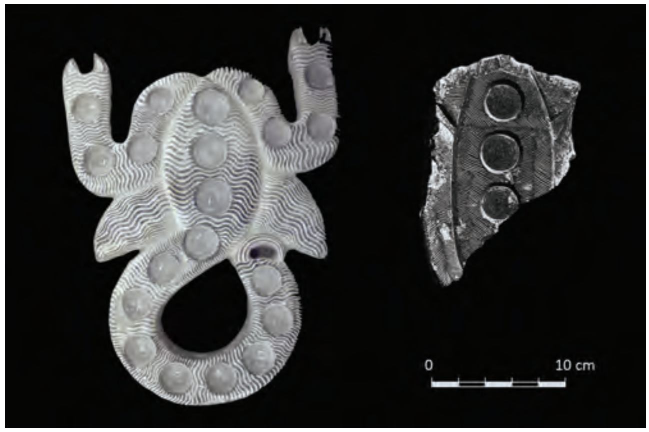

Figure 9.26 Jiroft, chlorite plaque in form of scorpion (after Madjidzadeh 2003:136); Tepe Yahya, fragment of similar plaque (after Dunn-Vaturi and Schädler 2006: pl. 2).

Lamberg-Karlovsky 2004: 53; Mutin and Lamberg-Karlovsky 2021: 558–560). Chlorite vessel production continues and the local seals show Bactrian and Persian Gulf connections in their iconography (Ascalone 2013: 22, 2018: 638–639). Bactrian influences are found as far west as Ebla in north-western Syria with the occurrence of distinctive eagle pendants and huge quantities of unworked and semi-worked lapis materials found in Royal Palace G, destroyed at *c.* 2300 BC (Pinnock 2006; Ascalone 2007). A single fragment from Yahya IVA of a possible scorpion-form gaming board, in carved chlorite, compares well with a complete example from the Jiroft looted materials (Figure 9.26) (Lamberg-Karlovsky 1988: pl. XX:C; Perrot and Madjidzadeh 2003: 56; Dunn-Vaturi and Schädler 2006: pl. 2b).

Well to the south of Tepe Yahya and the Dawlatabad plain, survey has identified Bronze Age sites on Qeshm island in the Persian Gulf, with ceramics indicating connections to communities of south-eastern Iran and south-eastern Arabia in the Umm an-Nar period (2700–2000 BC) (Khosrowzadeh *et al.* 2017). These sites and others along the coast of the Persian Gulf (Carter *et al.* 2006) are located for exploitation of the local marine resources including fish and seashells.

On the desert fringes: Early Bronze Age archaeology of the western Dasht-e Lut

Along the western edge of the Dasht-e Lut, watered by the springs and streams that flow off the edge of the Banan mountains, sits the site of **Shahdad** on an alluvial fan of the Takab plain (Salvatori and Vidale 1982; Hakemi 1986, 1992, 1994, 1997; Pittman 1984: 23–31; Hakemi and Sajjadi 1989; Voigt and Dyson 1992: 146–147; Salvatori and Tosi 1997; Kaboli 2002; Lawler 2011). Survey reveals that the settlement at Shahdad shifted westwards through time, moving from fifth-fourth millennia BC mounds in the east to an urban sprawl of 80–100 ha by the later third millennium BC directly east of the modern city of Shahdad (Figure 9.27) (Vidale *et al.* 2012: Figure 2; Eskandari 2019). Excavations by Ali Hakemi focused on a massive mortuary ground in Area A (Figure 9.28) and associated craft areas, for the manufacture of pottery, luxury stone artefacts and copper metallurgy (Figure 9.29). Excavations by Mir Abedin Kaboli (Kaboli 2002) added new information regarding residential and craft production areas. Again, highly valued artefacts were being produced more for deposition in human burials in the Shahdad cemetery than for interregional trade. Most of the 382 excavated graves date to the mid-later third millennium BC but much of the site appears to date to the later fourth millennium BC although these levels have not been extensively investigated. Many graves contain ceramic vessels, mainly plain in keeping with the regional trend to plainer ceramics in the later Early Bronze Age but also including some terracotta model buildings, probably representations of temples (Gasche and Cole 2018: 745). Several vessels and metal artefacts have parallels with the BMAC of the Oxus region to the north and northeast (Mutin and Lamberg-Karlovsky 2021: 554–558), which may indicate a presence of Central Asian individuals in Shahdad's cemetery (Hiebert and Lamberg-Karlovsky 1992). Kilns suggest significant production of pottery on site (Fazeli Nashli *et al.* 2012).

Strikingly, there are very few examples of carved soft stone vessels in the Shahdad graves, in contrast to their abundance in the graves of the Halil Rud and at the sites of Konar Sandal South and Tepe Yahya IVB, which suggests a strong degree of regional specialisation in both production and consumption of valued grave goods. By contrast, chlorite artefacts at Shahdad include undecorated vessels, bell-shaped bowls, boxes with lids and small perfume or cosmetic jars (Figure 9.30) (Kohl 2004: 286), including one with lead-based cosmetic contents still intact that may date to the fourth millennium, BC (Vidale *et al.* 2012). There are also stone staffs that may have

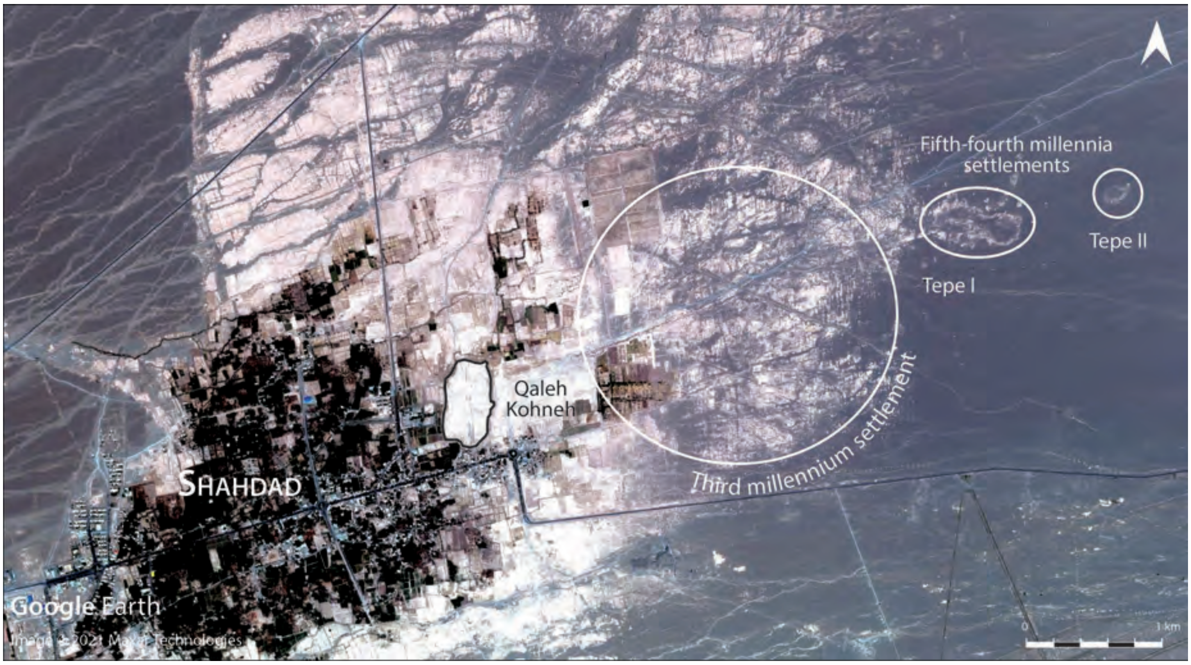

Figure 9.27 Area of Shahdad from Google Earth with key features marked (Vidale *et al.* 2012: Figure 2) (image courtesy of Massimo Vidale).

Figure 9.28 Shahdad, view of exposed graves in Cemetery A (after Hakemi 1997: Figure 18).

served as badges of power or authority. In many respects, such as iconography of glyptic art and painted clay sculptures of human heads and torsos, there are robust regional connections that may underlie shared ideologies. A notable feature of the Shahdad graves is the relative lack of evidence for social differentiation in the manner of burial and in the quality and quantity of grave goods, suggestive of a level distribution of wealth across society, or at least across those strata of society represented by the excavated graves.

The Shahdad graves frequently contain spectacular copper and silver objects, especially vessels and implements, often with repoussé figured scenes, as well as ceremonial axes and blades that compare well to examples from Tepe Hissar IIIC and the Oxus region (Meier 2011; Pittman 2013a: 312; Helwing 2018: 126). The extraordinary "Standard of Shahdad" (Figure 9.31) shows a seated male (?) figure addressing a squatting female, with other figures in the surroundings. Felines and a humped bull or zebu, along with palms and other trees, complete the scene. These figurative elements situate the standard within the context of the iconography of the Halil Rud and beyond in the mid-later third millennium BC. The metal plate of the standard was originally fixed to a shaft attached to a solid base, with a flying eagle at the shaft's summit (Figure 9.31) (Hakemi 1997: 271, 649). There are also extraordinary fragments of painted matting including a scene depicting a bearded, long-haired man seated

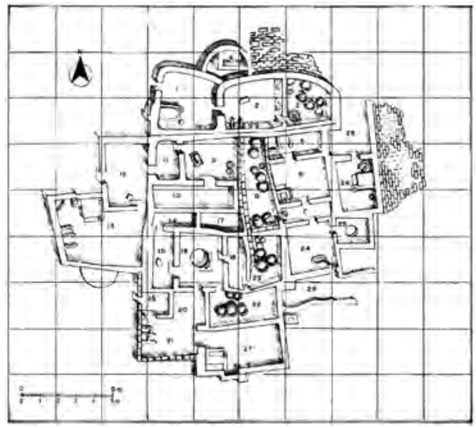

Figure 9.29 Shahdad, plan of craftworking area, Site D (after Hakemi 1997: Figure 54).

Figure 9.30 Shahdad, chlorite box from grave 116, object 1103 (after Hakemi 1997: pl. 7).

under a crescent moon and planets or stars (Figure 9.32) (Hakemi 1997: 663), and a copper alloy pin with an engraved scene of a horned, long-haired man seated between rearing snakes (Figure 9.33) (Meier and Vidale 2013). A so-called "metallurgical workshop" excavated at Shahdad as well as ovens located within a "private house" in fact appear rather to have been for domestic heating and cooking, comparable to contemporary examples from Turkmenistan and possibly indicative of strong sociocultural connections between these regions (Meier 2019) as also attested by the grave good evidence outlined above.

Copper stamp seals at Shahdad, sometimes in the form of elaborate pinheads and in the "compartmented" form, also compare to seals from Shahr-i Sokhta II–III (see below), the Halil Rud and the Oxus region (Baghestani 1997; Winkelmann 1997, 2000). A handful of cylinder seals from the Shahdad graves bear similarities to the seals from Yahya and Konar Sandal South (Figure 9.34) (Ascalone 2011, 2013), with a focus on female deities but without the evidence of impressions on sealings, probably because the sorts of rubbish deposits that traditionally yield large quantities of clay sealings have not been excavated at Shahdad. A small red vase bears the only Shahdad inscription, in the "Linear Elamite" style, possibly contemporary with the Linear Elamite inscriptions from Konar Sandal discussed above (see also Chapter 10; Amiet 1973b; Voigt and Dyson 1992: 147; Desset 2018b). To the west of Shahdad, near the town of Rafsanjan, metal objects like those excavated at Shahdad have been found at the site of **Khinaman**, including weapons, tools and vessels (Curtis 1988; Maxwell-Hyslop 1988). Faunal remains from the site of Kalehkoob in the northern Lut desert include cattle, gazelle and equids, varying in representation according to environmental conditions (Hashemi *et al.* 2018).

Survey east and south of Shahdad has recovered evidence for occupation from the fifth millennium BC onwards, including a dozen Early Bronze Age sites two of which, **Keshit** and **Mokhtarabad**, comprise multi-hectare

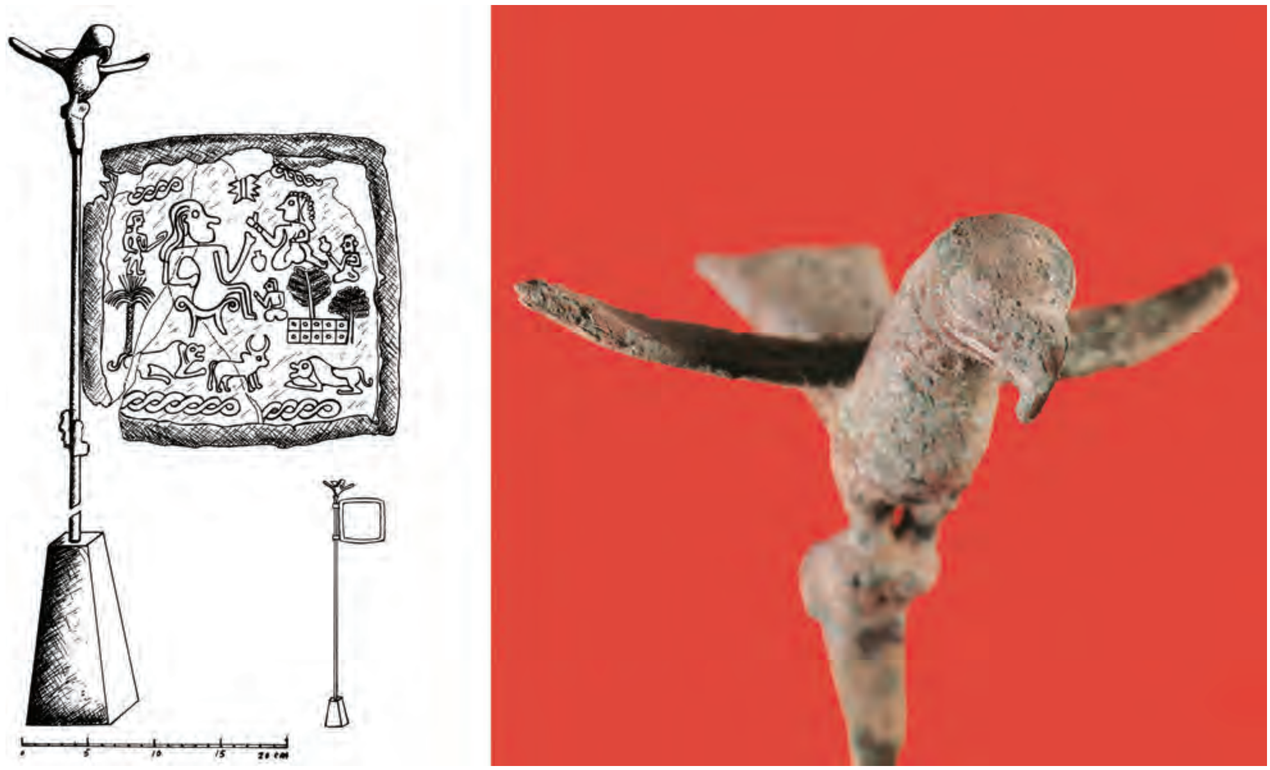

Figure 9.31 Shahdad, "Standard of Shahdad" (after Hakemi 1997: pl. 2, Figure Gt).

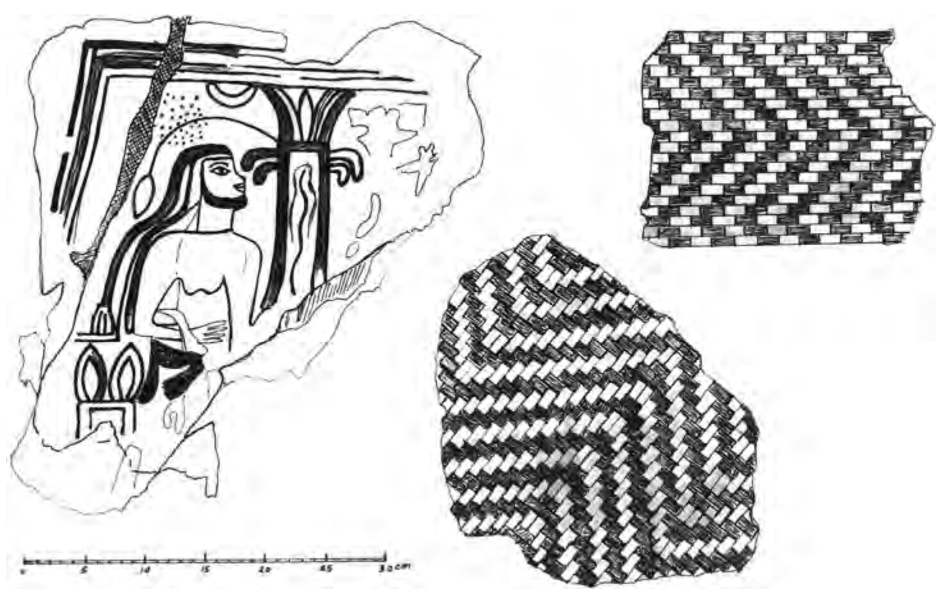

Figure 9.32 Shahdad, fragment of painted matting (after Hakemi 1997: Figure K).

deflated spreads of ceramics, fragments of stone vessels, bronze objects, lithic tools and slag, candidates for possible urban or trade and craft centres along a major circum-desert routeway (Eskandari 2019). Other EBA sites east of Shahdad and located on the same alluvial fan appear to have served as satellite sites for Shahdad, while the large centres of Keshit and Mokhtarabad lacked satellite sites and may have been situated to control movement of cherished materials and finished items along an important north-south routeway still in use today.

Figure 9.33 Shahdad, copper alloy pin with engraved scene (Meier and Vidale 2013: Figure 3) (image courtesy of Massimo Vidale).

Figure 9.34 Shahdad, cylinder seals from Cemetery A (after Hakemi 1997: Figure Ib).

Connected communities: the Rud-e Bampur complex and the Jazmurian basin

During the Bronze Age, the valley of the Bampur river to the southeast of the Jazmurian basin hosted thriving communities, maximising their connecting role between central Iran to the west and Pakistan, India and Afghanistan to the east (Tosi 1974; Voigt and Dyson 1992: 151–152; Mortazavi 2006; Kohl 2007: 227–230; Besenval 2011), but our in-depth understanding is hampered by the lack of intensive investigation of the region (Mutin *et al.* 2017b). Analysis of a sediment core from the Jazmurian basin (Vaezi *et al.* 2019) indicates that a significant increase in rainfall and a decline in aeolian dust input in the early third millennium BC may have provided a favourable context for the socio-cultural developments of this region and beyond.

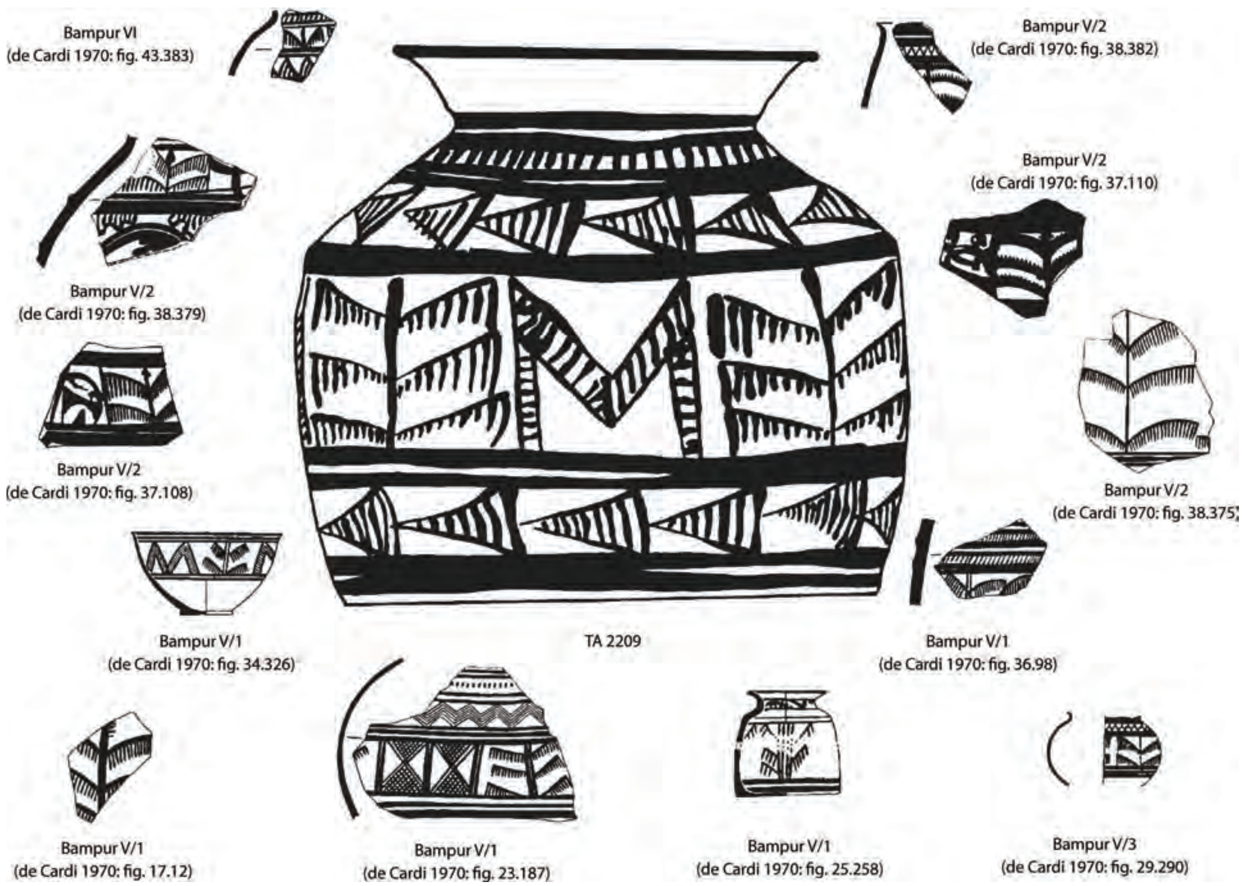

Figure 9.35 Bampur, ceramic connections with Tell Abraq (after Potts 2003: Figure 16).

The most important site is **Bampur**, excavated first by Sir Aurel Stein and then by Beatrice de Cardi (1967, 1968, 1970). Ceramics from third millennium BC levels at Bampur show connections with Shahr-i Sokhta II–IV, Tepe Yahya IVB, Konar Sandal South Lower Town phase 2 and the late Umm an-Nar grave from Tell Abraq across the Persian Gulf (Figure 9.35) (Potts 2003; Pittman 2013a). Carved soft-stone vessels of the type found so frequently in the Halil Rud sites are rare in the Bampur region, although imitated in the form of incised grey-ware ceramic forms, suggesting that the Jazmurian basin may have been culturally divided into western and eastern political entities in the Bronze Age (Kohl 2007: 230). Occupation of the eastern Jazmurian is focused on the periods *c.* 4500–3500 BC and 2600–1800 BC, interrupted by a significant hiatus with the exception of lavishly furnished graves as at the site of **Spidej** (Figure 9.36) (Heydari *et al.* 2018b, 2019). The major ceramic comparanda of this region are with Shahr-i Sokhta III-IV, Mundigak IV, Yahya IVB and sites of the Halil Rud (Figure 9.37) (Mutin and Minc 2019), while copper and silver stamp seals show connections to Shahdad, Yahya and Konar Sandal South. The large site of **Chegerdak** in the southern foothills of the Jazmurian basin emerged as a major centre in the third millennium BC, with ceramics and seals attesting significant cultural connections with the Halil Rud to the northwest, the Sistan plains to the northeast and the Kech Makran valleys to the south-east (Figure 9.38) (Heydari *et al.* 2015, 2018b).

Survey of the Bampur valley indicates a steady increase in human settlement of the region through the Early Bronze Age, peaking by the end of the third millennium BC (Mortazavi 2006). There is evidence that the river episodically dried up from the west, leading to an eastward migration of human settlement through the fifth to third millennia BC (Mutin *et al.* 2017b; Sarhaddi-Dadian *et al.* 2020). Small-scale investigations at the sites of Damin and Khurab yielded ceramics and bronze artefacts including stamp seals and, from a grave at Khurab, an axe adorned with a figured Bactrian camel (Lamberg-Karlovsky 1969; Tosi 1970a; Lamberg-Karlovsky and Schmandt-Besserat 1977; Potts 2004b). Ceramic connections to the east include occurrences at several sites in the Rud-e Bampur region of Basket Ware, made by moulding the clay vessel inside a basket (Mutin 2006).

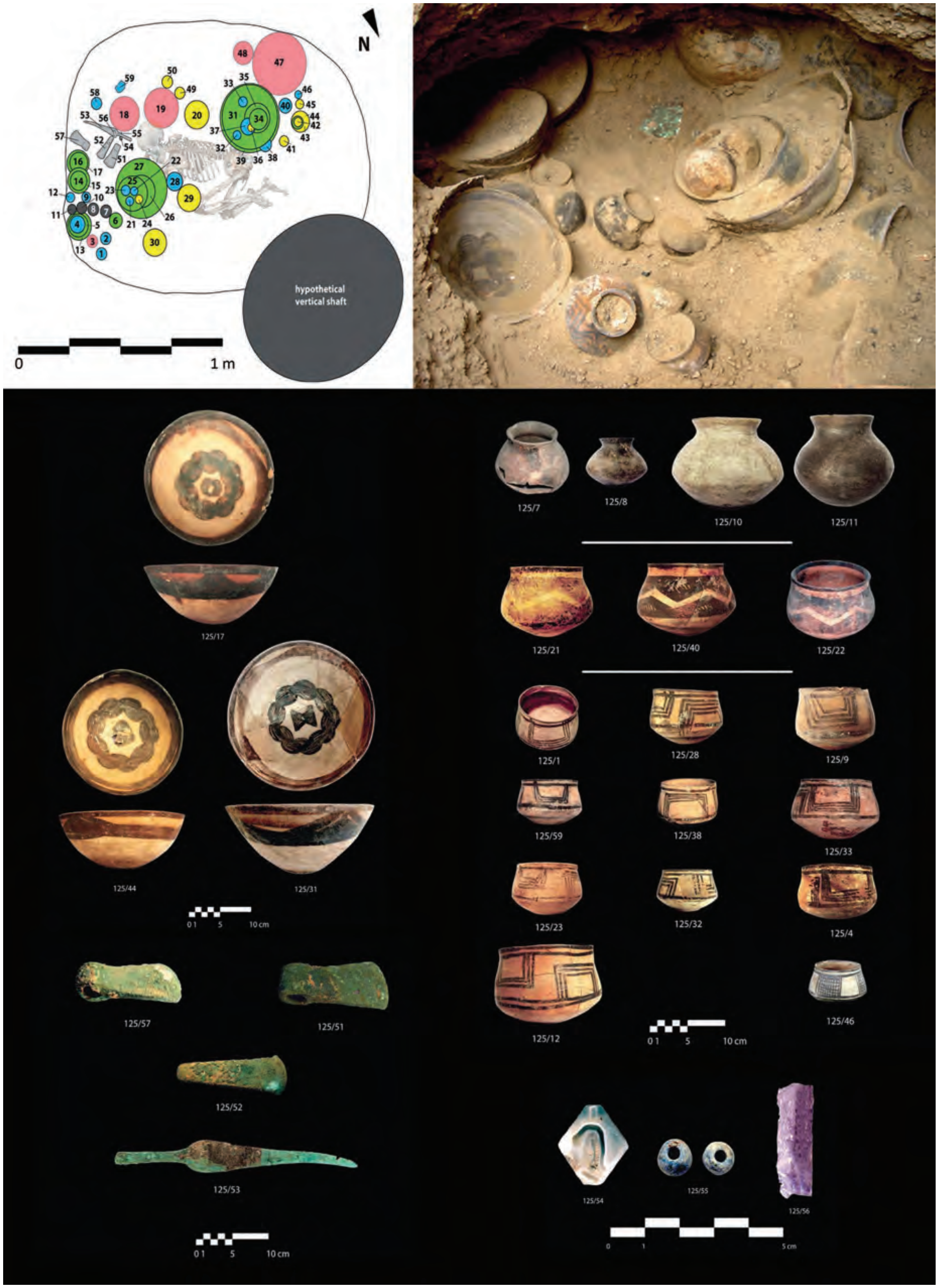

Figure 9.36 Spidej, grave 125 plan, view and selected ceramic and other grave goods (after Heydari *et al.* 2019: pls 4, 6, 16, 22, 24) (images courtesy of Massimo Vidale).

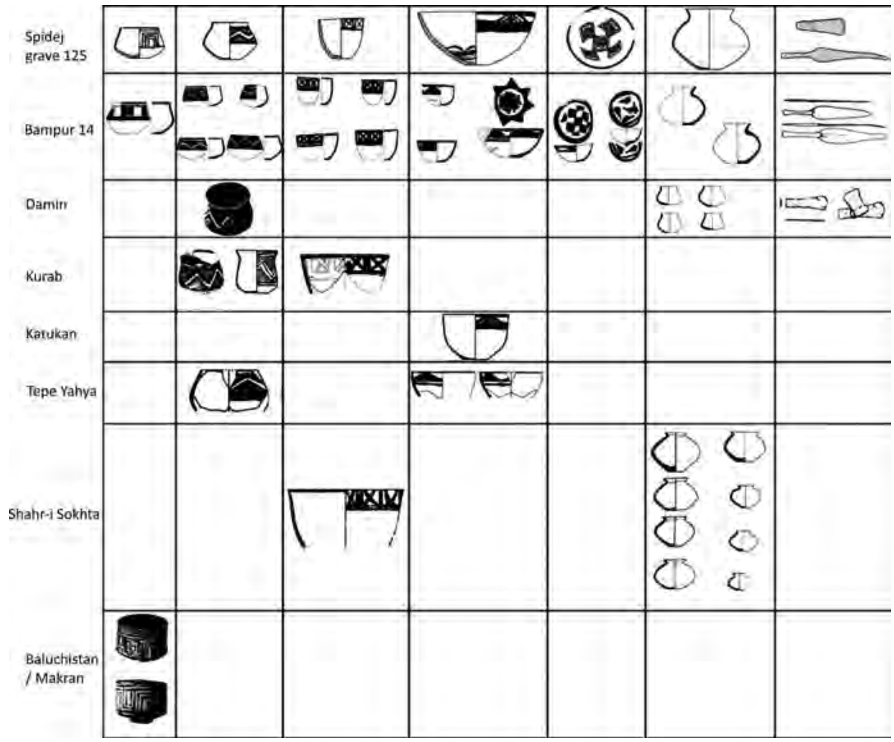

Figure 9.37 Ceramic connections of Spidej grave 125 and sites of south-eastern Iran and beyond (after Heydari *et al.* 2019: pl. 23).

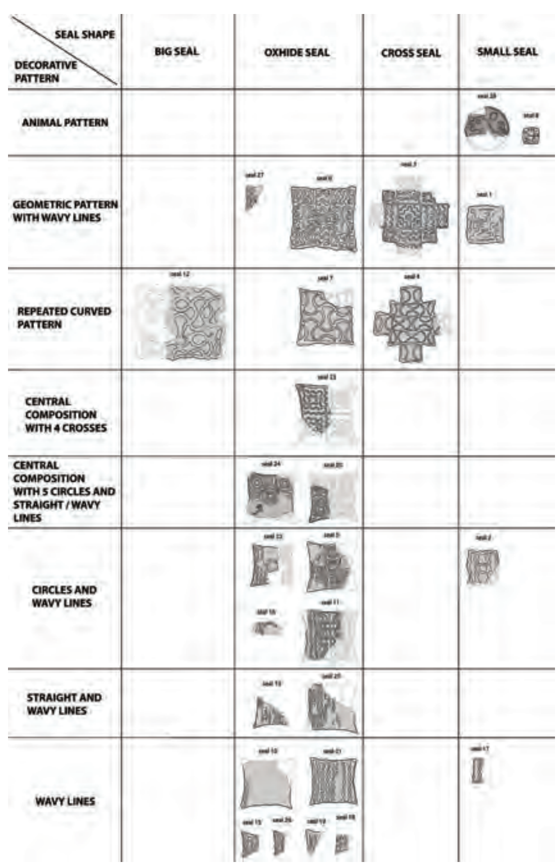

Figure 9.38 Copper stamp seals from Spidej, Chegerdak and Keshik, eastern Jazmurian basin (after Heydari *et al.* 2018b: Figure 11).

The Helmand civilisation: Shahr-i Sokhta, jewel in the Sistan crown

In the later fourth and through the third millennia BC a distinctive civilisation developed across the watershed of the great Helmand river, spanning sites such as Mundigak in Afghanistan and Shahr-i Sokhta in eastern Iran, sites that display significant connectivity through their architecture, ceramics, lithics, metallurgy, figurines and glyptics (Mutin and Minc 2019). First investigated by Sir Aurel Stein (1928) and a UNESCO World Heritage site since 2014, the hugely important site of **Shahr-i Sokhta** is located in a large intermontane basin, at the end of the Helmand river, which flows for 1,400 km from inner Afghanistan westwards across the border into Sistan before debouching into the Helmand basin (Figure 9.39) (Genito 2014: 163–170). Long-term Iranian and Italian excavations of third millennium BC levels ensure that Shahr-i Sokhta provides the fullest evidence regarding the Early Bronze Age of eastern Iran (Tosi 1968, 1969, 1983, 1984; Lamberg-Karlovsky and Tosi 1973; Biscione *et al.* 1974; Piperno and Salvatori 1983, 2007; Vidale 1984; Voigt and Dyson 1992: 152; Salvatori and Vidale 1997; Sajjadi 2003, 2006; Salvatori and Tosi 2005; Sajjadi *et al.* 2008; Lawler 2011; Sajjadi and Moradi 2015, 2016; Ascalone and Sajjadi 2019; Mutin and Minc 2019). Study of wood charcoal from the site suggests that the environment of Shahr-i Sokhta may have been considerably more favourable, with ampler water input, through the third millennium BC than is the case in subsequent times including today (Shirazi and Shirazi 2012).

The mounds of Shahr-i Sokhta rise to 18 m above the plain and cover up to 150 ha (Figure 9.40). Commencing from the late fourth millennium BC, occupation at Shahr-i Sokhta persists through multiple levels, with period II in the mid-third millennium BC hosting its greatest extent and its widest engagement in networks of exchange reaching across the Iranian plateau, Lower Mesopotamia, Central Asia and the Indus Valley (Cortesi *et al.* 2008). The site can be divided into five major zones (Figure 9.41) (Sajjadi 2003: 21, Figure 2; Sajjadi and Moradi 2016: Figure 1):

The Eastern Residential Area at the highest point of the mound
The Central Quarters Area in the middle of the north-eastern mounds
The Craft Quarters focused at the northwest of the site
The Monumental Area directly east of the Craft Quarters
The Graveyard Area across the central region of the site, covering up to 25–30 ha in area.

Period I, dating to *c.* 3200–2800 BC, includes fragments of evidence for low-level Proto-Elamite engagement (Chapter 7), including a single tablet and 20 seal impressions in Proto-Elamite style (Amiet and Tosi 1978; Amiet 1979a, 1983; Ameri 2020). Multiple ceramic styles from period I, including Emir Grey Ware and painted slow-wheel-made vessels show affinities with assemblages to the east in Pakistani Makran as at Shahi-Tump and Miri Qalat IIIa-b (Figure 9.42) (Franke 2008; Besenval 2011; Mutin 2013b; Mutin *et al.* 2017a; Mutin and Minc 2019), to Namazga III sites in Central Asia (Biscione 1973; Thornton 2012: 599; Kirtcho 2021: 127) and to contemporary materials in the Halil Rud region and in Lower Mesopotamia (Moradi in press). The use of cylinder seals in period I phase 10 is succeeded by exclusive use of stone and bone stamp seals in period I phase 9-8 (Ferioli *et al.* 1979; Fiandra and Pepe 2000), suggesting a significant reorientation in the modes of bureaucratic activity.

Period II at Shahr-i Sokhta, radiocarbon dated to 2800–2600 BC, sees an expansion of the Eastern Residential Area, with large house compounds and streets. There is an elaboration of painted decoration on the ceramics, to include birds, animals and plants as well as geometric patterns. Certain polychrome vessels have their only parallels at Mundigak significantly upstream to the north in Afghanistan (Casal 1961; Biscione 1974; Mugavero and Vidale 2003). Period II occupation expanded beyond the Eastern Residential Quarter to include the Central Quarter covering 20 ha, making the total occupied area more than 100 ha, one of the largest sites from any prehistoric period on the Iranian plateau. The Central Quarter includes large buildings and significant evidence for craft activity, including copper and bronze metallurgy (Keykhaei *et al.* 2012), alabaster or calcite vessel production (Ciarla 1979; Boccuti *et al.* 2015), and large-scale working of lapis, turquoise and other valued stones (Tosi and Piperno 1975; Ciarla 1981; Tosi 1984; Casanova 1991, 1992, 2013). Within the Monumental Area, Building 1 represents one of the largest structures excavated at the site, with several phases spanning much of periods II and III (Figure 9.43) (Sajjadi and Moradi 2016: Figure 2), interpreted as a possible temple with surrounding residential units (Sajjadi and Moradi 2016: 151).

Analysis of metal ores and slags from period II at Shahr-i Sokhta suggests evidence for production of sheet bar ingots (Heskel and Lamberg-Karlovsky 1986; Hauptmann *et al.* 2003; Thornton and Lamberg-Karlovsky 2004). The complete absence of tin in copper-based artefacts in period II, despite relative proximity to cassiterite sources in Afghanistan, suggests adherence to traditional modes of production, in contrast to metallurgical developments at other sites such as Tepe Yahya (see above).

The lapis lazuli arriving at Shahr-i Sokhta came from the Badakhshan mines of north-eastern Afghanistan (Mariotinni *et al.* 2017) with no evidence of material from the Pamir/Lake Baikal source east of Badakhshan.

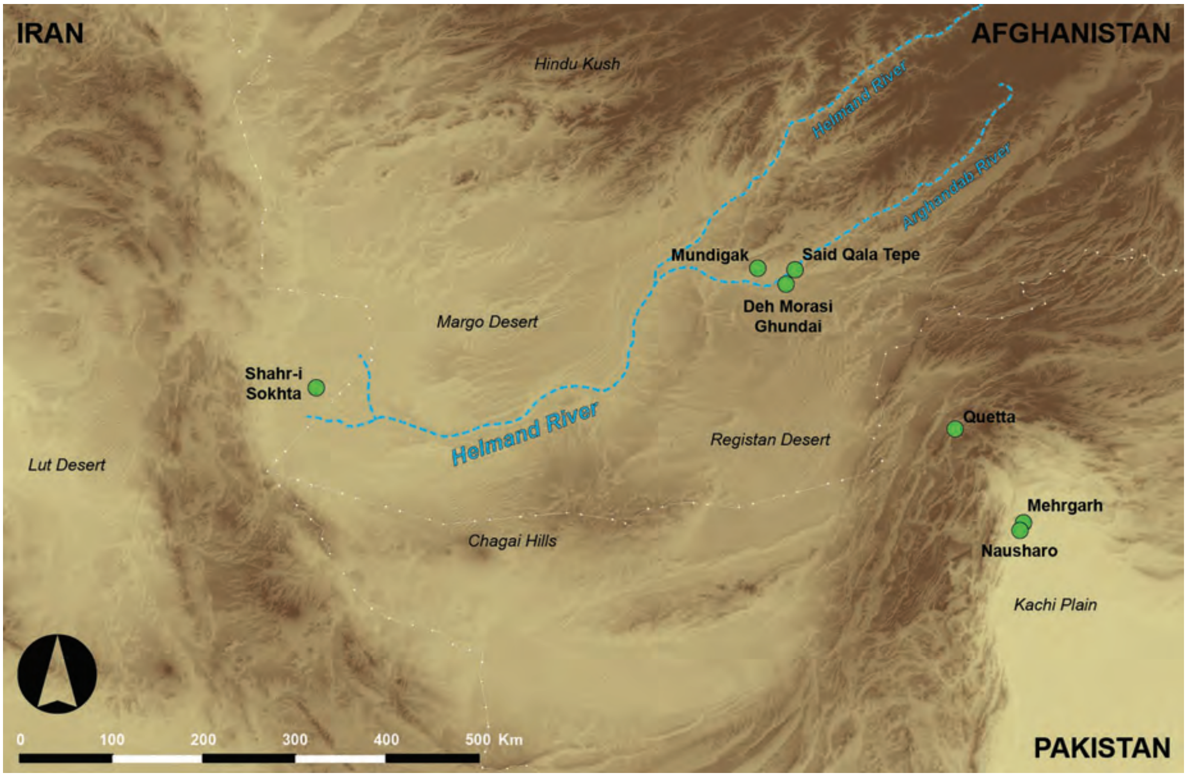

Figure 9.39 Map to show location of Shahr-i Sokhta and sites to the east (Mutin and Minc 2019: Figure 1) (image courtesy of Benjamin Mutin).

Figure 9.40 Shahr-i Sokhta, aerial view looking southwest (image courtesy of Hussain Moradi).

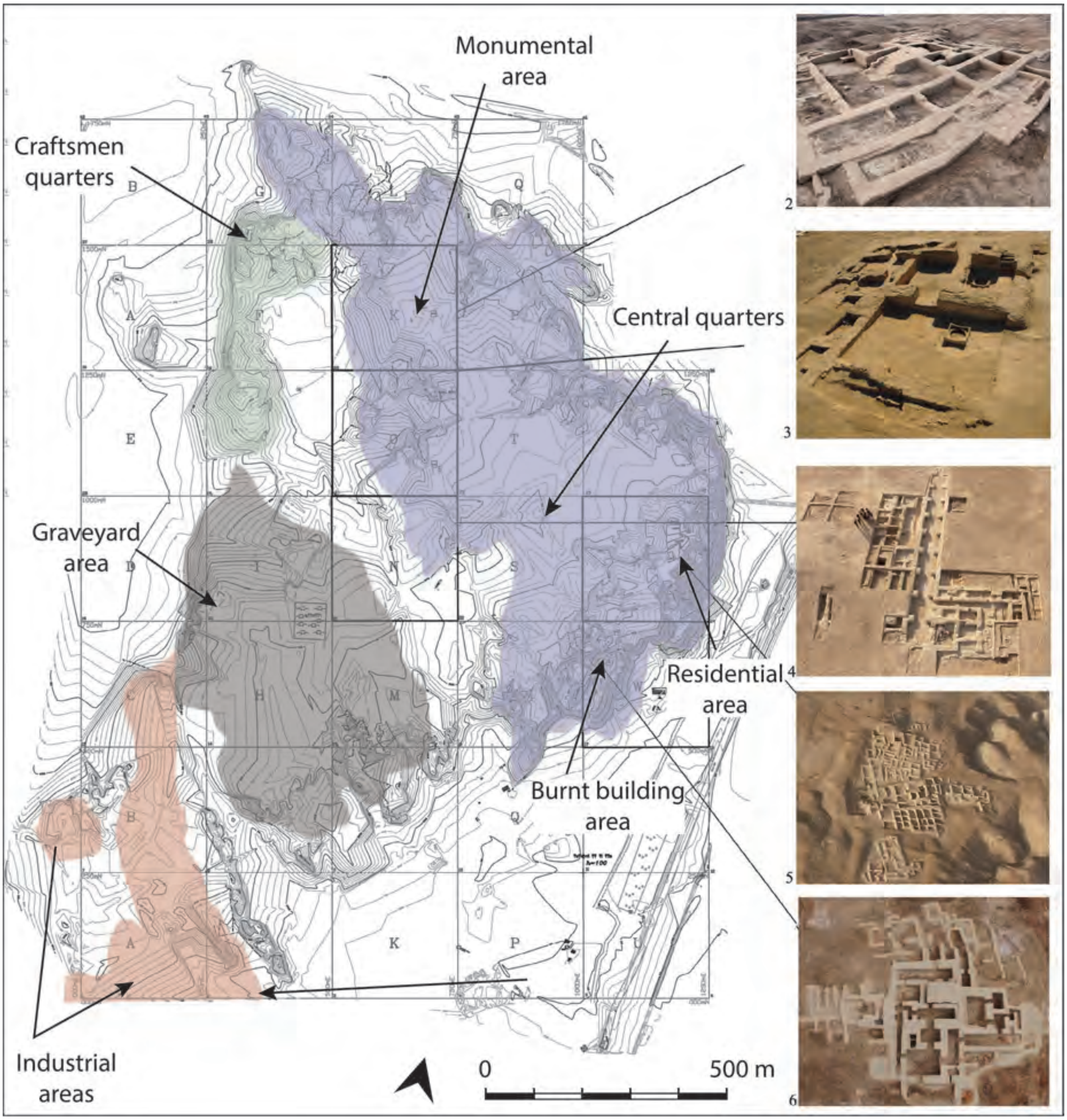

Figure 9.41 Shahr-i Sokhta, plan of site to show main excavated areas (Sajjadi 2003: Figure 2; Sajjadi and Moradi 2016: Figure 1; Moradi 2019: Figure 2) (images courtesy of Hussain Moradi).

Suggestions of a significant lapis lazuli source in the Chagai hills of western Baluchistan (Casanova 1992, 1997) have been dismissed as incompatible with the local geology (Law 2014; Mariotinni *et al.* 2017: 167–168). The lapis attested at Tepe Sialk came from an as yet unidentified source (Delmas and Casanova 1990). Turquoise at Shahr-i Sokhta, especially richly attested in graves of period II (Figure 9.44) (Foglini and Vidale 2017), appears to originate from the Kyzyl Kum mines of Turkmenistan and was worked exclusively for local consumption at Shahr-i Sokhta.

The lapis lazuli and other semi-precious stone bead-working site excavated in area EWK-EWP at the north-western edges of Shahr-i Sokhta represents the most informative and significant context of its type from all of Middle Asia and we are fortunate in having an exhaustive publication of every aspect of this exceptionally rich archaeological discovery (Lazzari and Vidale 2017). Especially notable is the period II stone-cutter's hoard, contained within a buff-ware jar set into the floor of a room (Tosi 1969; Lazzari and Vidale 2017: 21–35). This hoard provides a wealth of information regarding the technology of semi-precious stone bead manufacture in

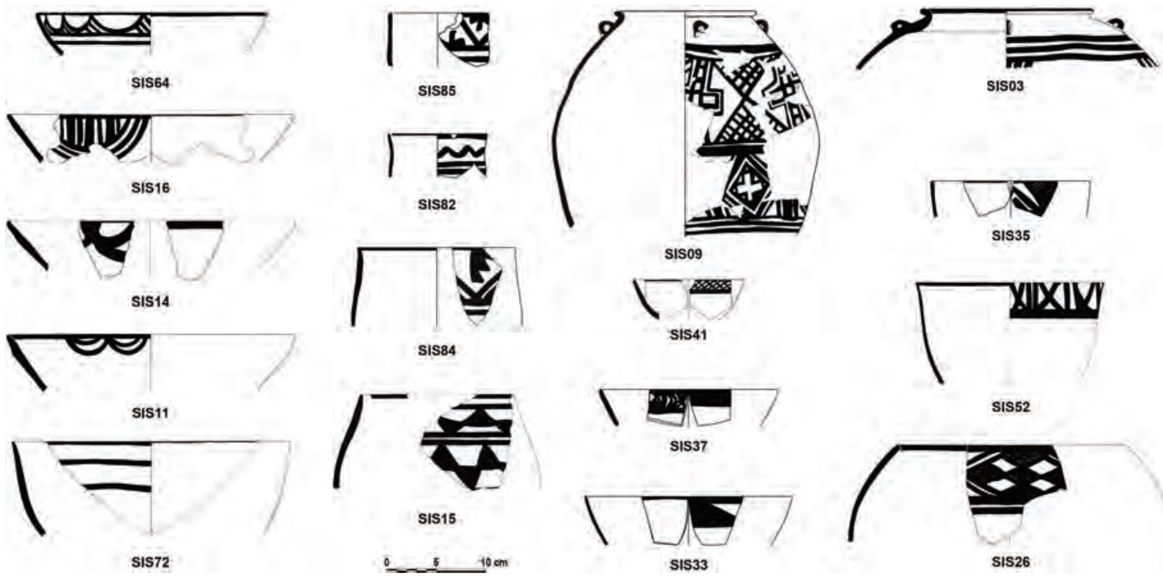

Figure 9.42 Shahr-i Sokhta, period I ceramics (Mutin and Minc 2019: Figures 2, 3, 5) (image courtesy of Benjamin Mutin).

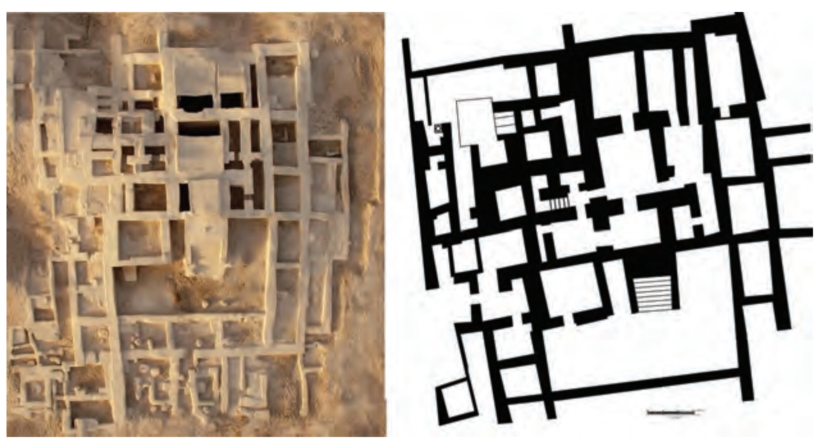

Figure 9.43 Shahr-e Sokhta, periods II-III, Monumental Area, view and plan of Building 1 (Sajjadi and Moradi 2016: Figure 2) (images courtesy of Hussain Moradi).

the third millennium BC. The hoard elements include lengths of hollow cane used as containers for fragments of a wide variety of worked stones, including lapis lazuli, carnelian, calcite, chalcedony, alabaster, rock crystal and other materials. Also in the hoard were shaped and worked pebbles used as bead-working tools and six extraordinary wooden tablets with holes used to hold beads while being worked (Figure 9.45) (Lazzari and Vidale 2017: Figure 16, col. pl. 8). The lack of drill bits in the hoard suggests that the process of drilling may have been carried out at a different location from the basic bead cutting and shaping.

More broadly across area EWK-EWP, a total of some 2000 lapis fragments weighing 3.8 kg was recovered from surface collection and excavations in this region of the site, from a major dumping ground of bead-working debris. Other important discoveries include "craftsmen graves" in area IRR, consisting of adult male interments in brick-lined tombs accompanied by bronze and stone tools for stone-working as well as blocks of lapis lazuli ready for cutting and finished worked items such as beads and assembled necklaces of lapis lazuli, turquoise and other materials (Tosi and Piperno 1975; Sajjadi 2003; Lazzari and Vidale 2017: 40–45). This deposition in the grave of craft tools along with partially worked materials and fully finished items affords us poignant insight into a dynamic conception of the afterlife, which envisaged ongoing activity and the exercise of socially valued skills and expertise persisting eternally after death.

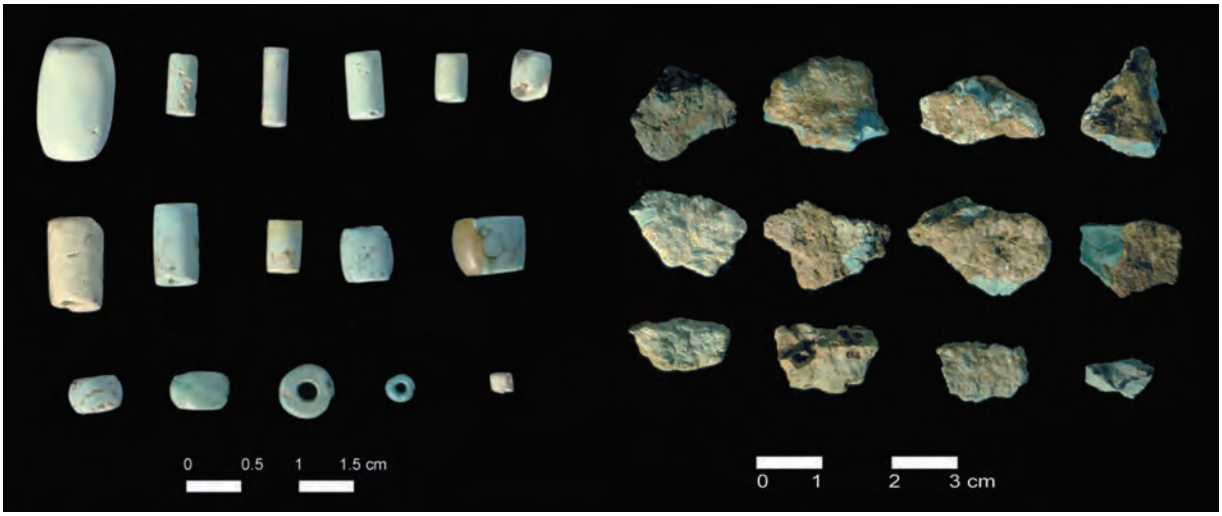

Figure 9.44 Shahr-i Sokhta, turquoise industry including mineral lumps and finished beads (Foglini and Vidale 2017: col. pls. 17–18) (images courtesy of Massimo Vidale).

As with so much of the specialised craft activity of the broader region, bead production was above all for local consumption plus limited consignments for interregional exchange (Bulgarelli 1981), with increasing consensus that most of the production was for deposition within graves in the immense cemetery at the site (T. Potts 1994: 214; Thornton 2012: 600; Vidale 2017). How was semi-precious stone bead production organised at Shahr-i Sokhta? While some authors have argued for a "coordination globale et centralisée de la production" of lapis lazuli at the site (Casanova 2013: 108), Massimo Vidale (2017: 309) points to the lack of any evidence, such as seals, sealings and tokens, for administrative monitoring of the lapis lazuli bead-making or of any other craft activity: "As far as the archaeological record is concerned, the craft activities may well have been carried out by independent groups or individual craftsmen without any control, accounting concern or formalized duty." Finds of large quantities of bird and fish bones and eggshell fragments mixed amongst the stone-working debris in area EWK-EWP (Tosi 1972) have suggested the intriguing possibility of seasonal working of lapis and other stones, carried out in the spring either by permanently resident farmers of the region or by mobile groups of pastoralists moving annually from summer pastures in the Badakhshan highlands, with direct access to the lapis lazuli mines at Sar-i Sang, carrying blocks of lapis lazuli in the winter down to Sistan where they spent the spring at Shahr-i Sokhta working on beads and lithics in exchange for local agricultural produce and other urban products (Vidale 2017: 316–317). The frequent occurrence of lambs or kids in generally rich graves in the cemetery at Shahr-i Sokhta (Sajjadi 2017: 329) enhances Vidale's discussion of pastoralist involvement in spring activities at the site.

In other areas of the site there is evidence for intensive use of stone and copper stamp seals, including the compartmented type, in administrative activity at Shahr-i Sokhta, comprising more than 180 clay sealings used to seal store-room doors and containers (Cattini 2000; Ameri 2020), associated with possible clay tokens or counters, which may relate to control over local agricultural production organised on a household basis. There are also many animal figurines, principally of the humped bull or zebu (*Bos indicus*) (Tosi 1984; Cattini 2000; Fiandra and Pepe 2000), and stylised human figurines in stone and clay in both standing and seated positions (Figure 9.46) (Shirazi 2007). This flourishing episode of craft and administrative activity was brought to an abrupt conclusion by a massive fire that raged across the Central Quarter and the Eastern Residential Quarter, always a major risk in a craft area involving intensive pyrotechnology.

After the fire that ended period II, period III occupation, *c.* 2600–2450 BC, restarted in the Central Quarter with the systematic construction of a massive structure, comprising two distinct architectural complexes enclosed within a large double, occasionally treble, parallel wall system covering a total area of 6,000 m^2 (Figure 9.47) (Salvatori and Vidale 1997: Figure 2). This impressive building, surviving only at foundation level and possibly having two storeys, made use of a sophisticated system of drainage using ceramic piping. What has not previously been commented on is this building's remarkable resemblance in its scale and plan, with its double-walled surrounding corridor and internal suites of rooms and courtyards, to large-scale buildings of Lower Mesopotamia of approximately contemporary date as attested at Early Dynastic III Sumerian sites including Eridu, Kish and Abu Salabikh, widely interpreted as palatial complexes (Matthews and Matthews 2017). It is notable that the double-walled corridor technique with ceramic drainage is also attested on the so-called "palace and

Figure 9.45 Shahr-i Sokhta, period II items from the stone-cutter's hoard including wooden bead holders, bead roughouts, beads shattered while being drilled, and finished beads, all of lapis lazuli (Lazzari and Vidale 2017: col. pl. 8) (images courtesy of Massimo Vidale).

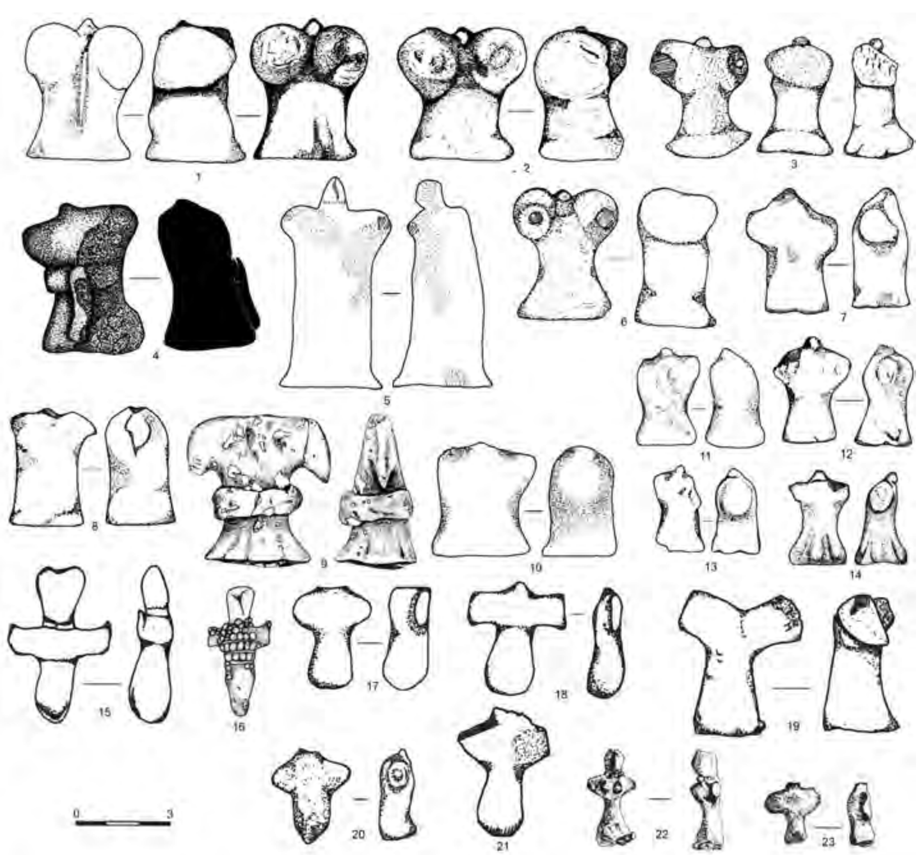

Figure 9.46 Shahr-i Sokhta, period II clay anthropomorphic figurines (after Shirazi 2007: Figures 5, 9).

fortification" building of late third millennium BC date at Gonur-depe in Turkmenistan (Sarianidi 2002; Muradov 2021), and there are further parallels with architectural compounds at Mundigak and Altyn-depe (Salvatori and Vidale 1997: 10). As in Mesopotamia in the mid-late third millennium BC (Van De Mieroop 2002), these dramatic changes in the nature of occupation at Shahr-i Sokhta in period III, as compared to the earlier period II, include increased evidence for the use of elite items of status display such as chlorite, ivory and carnelian beads, and a wooden gaming board similar to the famous "Game of Ur" with all its gaming pieces, another strong connection with the burgeoning elite societies of Lower Mesopotamia (Figure 9.48) (Piperno and Salvatori 1983: Figures 6–7, 12; Dunn-Vaturi and Schädler 2006; Cortesi *et al.* 2008; Sajjadi 2015). In the Monumental Area in period III, Building 20 displays certain unusual features including very thick walls, red painted wall-faces, an open portico-style entrance and large central hearths, all suggestive of some public or official significance (Figure 9.49) (Sajjadi and Moradi 2016: Figure 3).

These socio-political developments are further emphasised by the removal of craft production activity away from Shahr-i Sokhta itself to so-called satellite sites such as the 5 ha mounds of **Tepe Dasht**, 3 km to the southwest. Rare textiles from Tepe Dasht, made of ovicaprid fibres, can be associated with similar textiles from period III at Shahr-i Sokhta (Figure 9.50) (Mortazavi *et al.* 2011b). Excavations at Tepe Dasht indicate the site's role as a ceramic production centre serving Shahr-i Sokhta, lacking evidence for residential occupation. Kilns were used for firing ceramics as well as figurines including both human and animal forms (Figures 9.51–9.52). Especially notable are figurines in the form of zebu bulls, and it is likely that cow dung was the major source of fuel for firing the ceramic kilns at Tepe Dasht (Mortazavi 2010) and at the sites of Rud-i Biyaban 1 and 2, which served a similar satellite function for Shahr-i Sokhta (Tosi 1970b, 1972). Rud-i Biyaban 2, 20 km southeast of Shahr-i Sokhta, was a major focus for ceramic manufacture, with at least 50 chambered kilns and extensive spreads of slag and wasters (Tosi 1983). Excavations at **Tepe Graziani**, another site affiliated

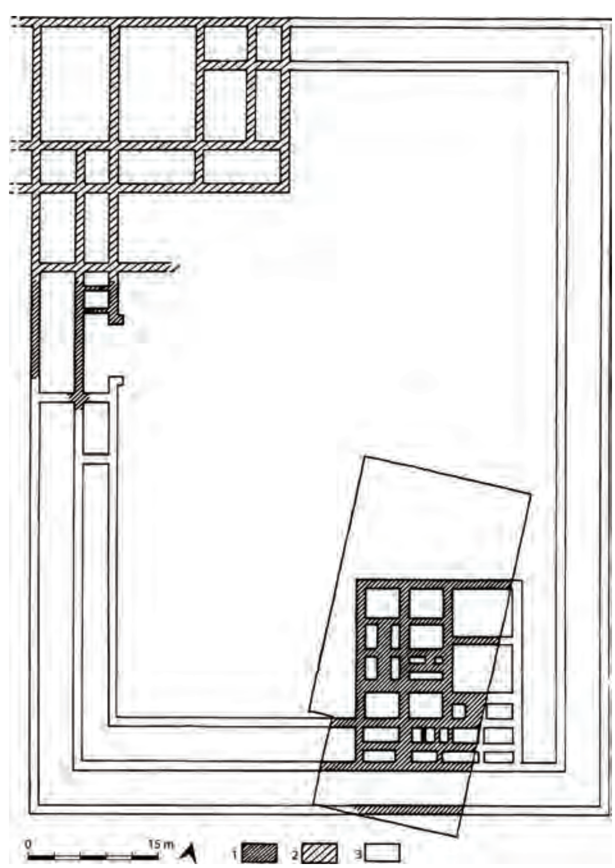

Figure 9.47 Shahr-i Sokhta, period III Central Quarter building (after Salvatori and Vidale 1997: Figure 2).

Figure 9.48 Shahr-i Sokhta, period III, wooden gaming board and pieces from catacomb grave 731 (Sajjadi 2015: pl. 8) (images courtesy of Hussain Moradi).

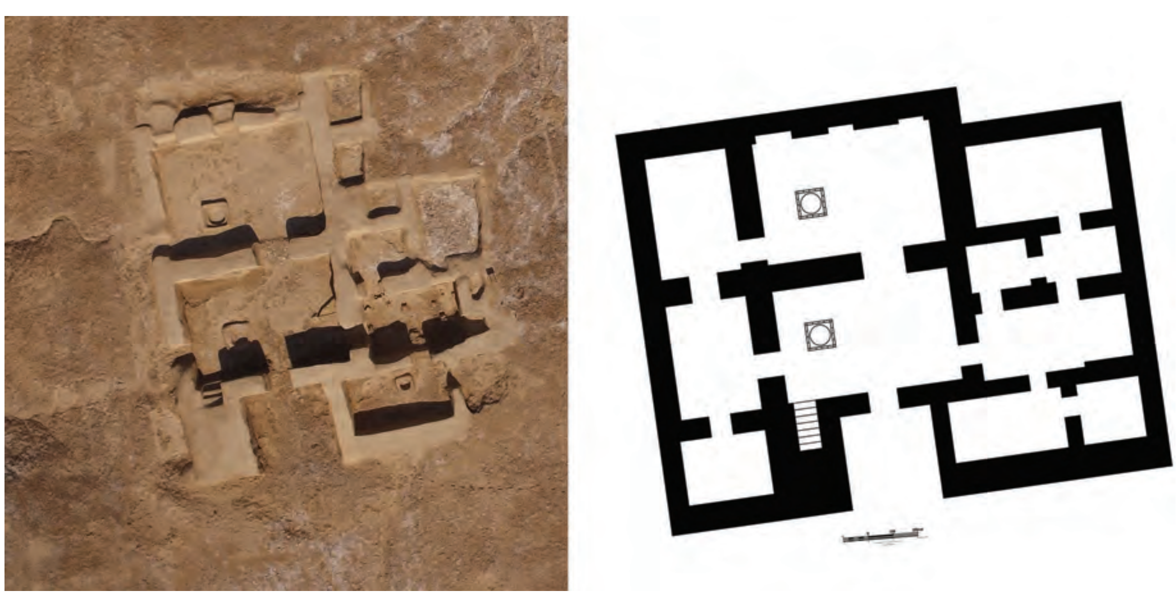

Figure 9.49 Shahr-i Sokhta, period III, Monumental Area, view and plan of Building 20 (Sajjadi and Moradi 2016: Figure 3) (images courtesy of Hussain Moradi).

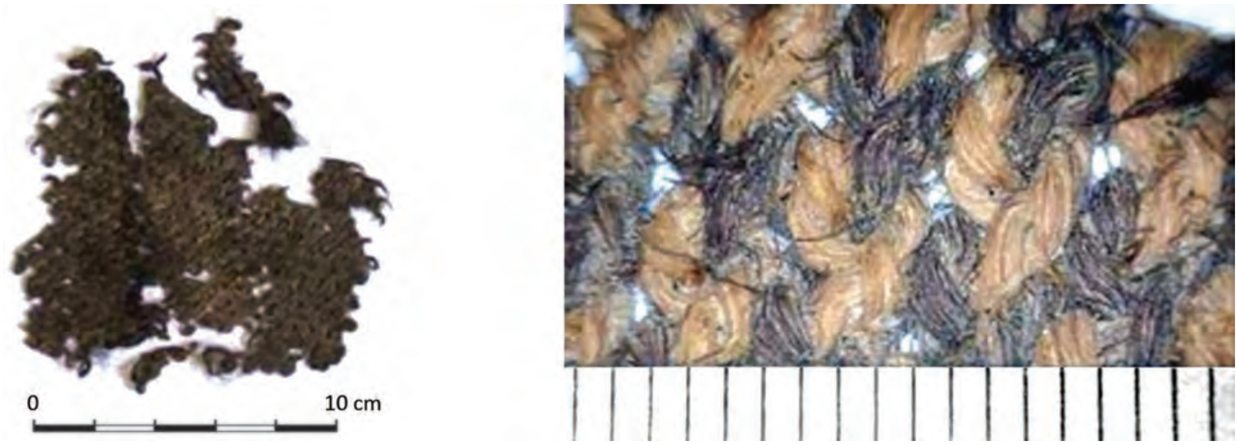

Figure 9.50 Tepe Dasht, textiles of ovicaprid fibres (after Mortazavi *et al*. 2011b: Figure 3).

Figure 9.51 Tepe Dasht, animal figurine fragments (after Mortazavi 2010: Figures 7–8).

Figure 9.52 Tepe Dasht, assorted figurine fragments (after Mortazavi 2010: Figures 7–8).

to Shahr-i Sokhta in this period, uncovered mudbrick houses, kilns and areas for craft-working in metal and precious stone, spanning much of the third millennium BC up to *c.* 2300 BC and showing strong connections to Shahr-i Sokhta (Kavosh *et al.* 2019).

As at Shahr-i Sokhta in all phases (Caloi and Compagnoni 1977; Bökönyi and Bartosiewicz 2000), faunal remains from Graziani are dominated by sheep/goat at 92% of identified species by number. In contrast to Shahr-i Sokhta, however, at Graziani goat are much more common than sheep, strongly indicative of a pastoral economy specialised on herding these animals (Mashkour *et al.* 2019). The very low representation of cattle at Graziani, at <1%, compared to their 18% representation at Shahr-i Sokhta itself, suggests the possibility that cattle were bred and raised at satellite sites such as Graziani, partly to provide dung for fuel for the many kilns at those sites, and then herded to Shahr-i Sokhta for slaughter and consumption there. Given the higher nutritional value, and likely social status, of sheep over goat and the very high value of beef, these differential patterns of meat consumption support the interpretation of sites such as Graziani as true satellite settlements to Shahr-i Sokhta. Fish remains from both Graziani and Shahr-i Sokhta suggest significant exploitation of the riverine and marsh resources of the Helmand river and its tributaries. In all periods at Shahr-i Sokhta the main crops were wheat, barley and lentils with significant evidence for cropping of fruits (watermelon, grape, date), nuts (pistachio), vegetables (cucumber, garlic), herbs and spices (coriander, cumin) (Costantini and Costantini-Biasini 1985; Shirazi 2019).

The physical shift in the location of ceramic production to satellite sites further involved an increased use of the fast wheel, standardisation in ceramic decoration, and greater use of pot-marks, all indicative of a trend towards craft specialisation and rationalisation. This trend is also attested in some of the period III burials at Shahr-i Sokhta, with one individual buried with a complete toolkit for working chalcedony and calcite beads (Piperno 1976). Survey of the Sistan plain has detected large numbers of Bronze Age sites, including Tepe Sadegh and Tappeh Yalda (Mousavi Haji and Mehrafarin 2006, 2009), indicating that Shahr-i Sokhta was situated within a dense network of contemporary settlements many of which appear to have served it as a central place for craft production and burial of their dead.

Occupation at Shahr-i Sokhta in period IV, dating to *c.* 2450–2200 BC, previously believed to have been reduced in scale from period III (Sajjadi and Moradi 2015, 2016), is shown by new survey to be equally extensive with multiple large buildings (Moradi 2019). A massive Burned Building was excavated at the southeast of the mound, with an unfortunate youth trapped inside (Biscione 1979). This building appears to have been a residence for a community of families or an extended family, sharing facilities such as ovens and storerooms. In the Central Residential Area, excavations in Area 26 exposed a complex of rooms either side of an impressive buttressed corridor, 50 m long, plus associated suites of rooms (Figures 9.53–9.54) (Sajjadi and Moradi 2016: Figure 6). Ceramics, including canister jars, incised grey ware and snake-cordoned decorative elements, show affinities with assemblages from Bampur V-VI as well as links to Namazga V and early VI in Bactria-Margiana (Tosi 1983; Pittman 2013a: 316; Tahmasebi Zave and Iravani Ghadim 2016). A reputed surface find of a headless torso sculpture, now in Zahedan Museum, has been suggested as representing a "priest-king" and compared to contemporary examples from Gonur-depe in Margiana, Mundigak in Afghanistan and Mohenjo-Daro in the Indus Valley (Vidale 2018c). A major reduction in administrative activity is suggested by the lack of seal evidence, with only a few baked clay stamp seals attested (Tusa 1977). Following destruction by fire and abandonment, the last occupation at Shahr-i Sokhta in period 0 consisted of modest "squatter" evidence, with final abandonment of

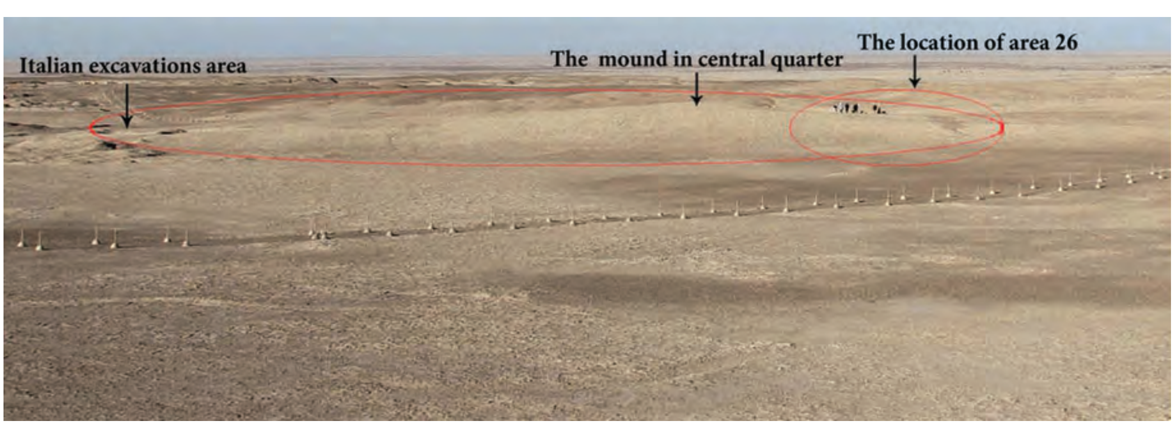

Figure 9.53 Shahr-i Sokhta, period IV, Area 26 building (Sajjadi and Moradi 2016: Figure 6) (image courtesy of Hussain Moradi).

Figure 9.54 Shahr-i Sokhta, period IV, Area 26 building (Sajjadi and Moradi 2016: Figure 6) (image courtesy of Hussain Moradi).

the site prior to the appearance of BMAC ceramic evidence in the broader region (see below for BMAC; Biscione and Vahdati 2021: 541, 546).

Excavations at the small site of **Tepe Taleb Khan**, 20 km south of Shahr-i Sokhta, have uncovered a sizeable mudbrick storage depot, dated to 2450–2350 BC, with an adjacent pit containing discarded administrative artefacts including clay bullae, tokens, miniature vessels, jar sealings with stamp seal impressions, small clay stamp seals, clay tags, animal and human figurines and possible numerical tablets. This extraordinary assemblage of items suggests the presence at Tepe Taleb Khan of a group of people exercising meticulous control over the input, storage and output of commodities of unknown nature, independently of activities centred at Shahr-i Sokhta itself. Parallels in the stamp seals suggest significant connectivity with the Bactria-Margiana region to the northeast. Rich archaeobotanical evidence from Tepe Taleb Khan (Kavosh *et al.* 2020) indicates both the exploitation of a wide range of cultivated and wild species, and the significantly more favourable climatic conditions of the region in the mid-late third millennium BC within which societies of the region flourished.

The dead of Shahr-i Sokhta were buried in an immense necropolis, spread over some 30 ha at the southwest of the site with an estimated total of 20,000–30,000 graves across all periods, of which some 1,000 have been excavated, most commonly of periods II–III (Tosi and Piperno 1975; Piperno 1976, 1977, 1979, 1986; Piperno and Salvatori 1982, 1983, 2007; Bonora *et al.* 2000; Sajjadi 2003, 2005, 2015, 2017; Sajjadi and Casanova 2006; Sajjadi *et al.* 2008). Physical anthropological study of hundreds of the recovered skeletons indicates average age at death of men at 33 and women at 30 years of age, with significant numbers of women, especially, surviving into older age (Shadmehr *et al.* 2017). Analysis of tooth wear patterns suggests systematic use of the frontal teeth as "a third hand" in as yet unidentified craft activities (Sajjadi *et al.* 2008), likely related to basketry as amply attested in material form in many of the tombs and in modern ethnographic examples from elsewhere (Smith 1977). Analysis of aDNA from Shahr-i Sokhta human skeletons suggests a genetically mixed population with significant evidence for input from an Indus Valley gene pool in the later third millennium BC (Narasimhan *et al.* 2019).

Grave types include pits with internal mudbrick walls, often lined with split reed matting, niched or domed chambers with entrance shafts, rare collective graves for successive deposition of bodies, and "memorial burials" with grave goods but no evidence for a human body. The tombs comprising a vertical shaft with adjacent domed chamber have been characterised as catacomb graves (Figure 9.55), which can contain single or multiple burials, and are interpreted by Sajjadi (2015) as containing the remains of high-status individuals or chiefs and their immediate family. These tombs, 41 examples of which have been excavated at Shahr-i Sokhta, tend to be quite elaborate both in their construction and in the quantity and quality of grave goods deposited within them, including textiles, baskets, metal vessels and jewellery, polychrome pottery and necklaces of lapis lazuli, carnelian, gold and turquoise as well as occasional cylinder and stamp seals (Sajjadi 2015: table 1). The

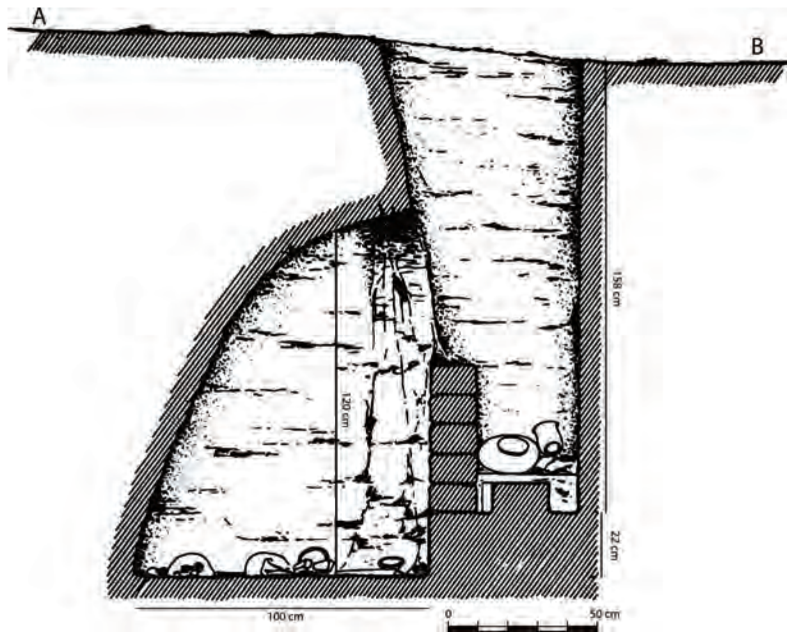

Figure 9.55 Shahr-i Sokhta, section through catacomb grave 19 (after Sajjadi 2015: Figure 8).

Shahr-i Sokhta catacomb graves have good parallels at Bronze Age sites in southern Uzbekistan and Central Asia, with male and female adults and children buried within them as at Shahr-i Sokhta. The wooden game board with dice and gaming pieces referred to above (Figure 9.48) comes from one of these catacomb graves, number 731, of a male individual aged 20–25 years, one of the richest graves in the entire cemetery (Figure 9.56) (Sajjadi 2015).

More broadly, goods buried with the dead include young goats, ceramics, beads of turquoise, lapis lazuli and chalcedony, stone vessels, stamp and cylinder seals (Ameri 2020), with occasional survival of organic materials such as wood, textiles and hair. The peak of deposition of materials of lapis lazuli occurs in period I (Lazzari and Vidale 2017: 46). Very early textile evidence includes unusual pieces integrating sheep wool with goat hair (Good 2012), and remains of ancient bread have also been identified within graves (Sajjadi *et al.* 2008).

Chemical analysis of distinctive stone vials commonly found in female, and occasionally male, graves across periods I-III shows that they were used as cosmetic containers, holding minerals that could produce colourings in white, green and blue-green, probably applied to the skin using bird feathers (Vidale *et al.* 2016). One female adult burial, dated to 3000–2900 BC, was accompanied by multiple ceramic vessels, a bronze mirror, beads of lapis lazuli and turquoise and, most strikingly, a possible artificial eye in the form of an engraved bitumen hemisphere set into the left eye socket (Figure 9.57) (Sajjadi *et al.* 2008: Figures 10–12). The convex surface of the "eye" was finely engraved with a central circle and radiating silver-gold lines that must, *in vivo*, have presented a truly startling appearance. Differential modes of burial and deposition of sets of grave goods may be suggestive of ethnic or cultural grouping of buried individuals. The great variety of styles attested in the ceramic vessels and other items deposited in graves, showing links to Baluchistan, Afghanistan, Central Asia, north-eastern Iran and the Kerman region, as well as the lack of consistency in orientation of graves (Sajjadi 2015, 2017: 325), have raised the suggestion that "Shahr-i Sokhta was less a true "city" than an enlarged trading entrepôt – a sort of prehistoric caravanserai – in which merchants and tradesmen from across the Indo-Iranian borderlands congregated to do business" (Thornton 2012: 600).

The word "trades*men*" (our italics) used in the preceding quote prompts us to highlight the insightful research of Marta Ameri (2020) on the use of seals at Shahr-i Sokhta (Figure 9.58). Through detailed comparison of, on the one hand, seals and sealings found in residential areas of the site with, on the other hand, seals deposited in burials at the site, the majority of which (70%) are with female individuals, Ameri deduces that "it was in fact women who were responsible for most of the administrative sealing at Shahr-i Sokhta" rightly calling "into question the often unchallenged assumption that men were by default responsible for administration in ancient societies" (Ameri 2020: 2). A similar deduction can be made for female administrators at sites in Turkmenistan such as Gonur-depe and Altyn-depe where seals are also more commonly found in female graves (Ameri 2020: 25). Drawing on the contextual distribution of seals and sealings across the non-cemetery components of the site,

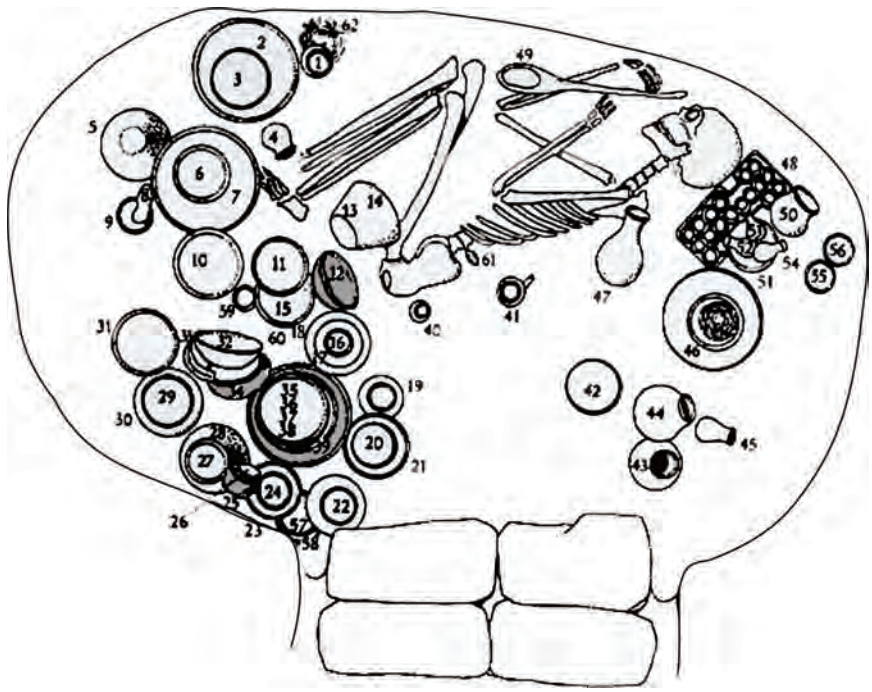

Figure 9.56 Shahr-i Sokhta, catacomb grave 731 (after Sajjadi 2015: Figure 21).

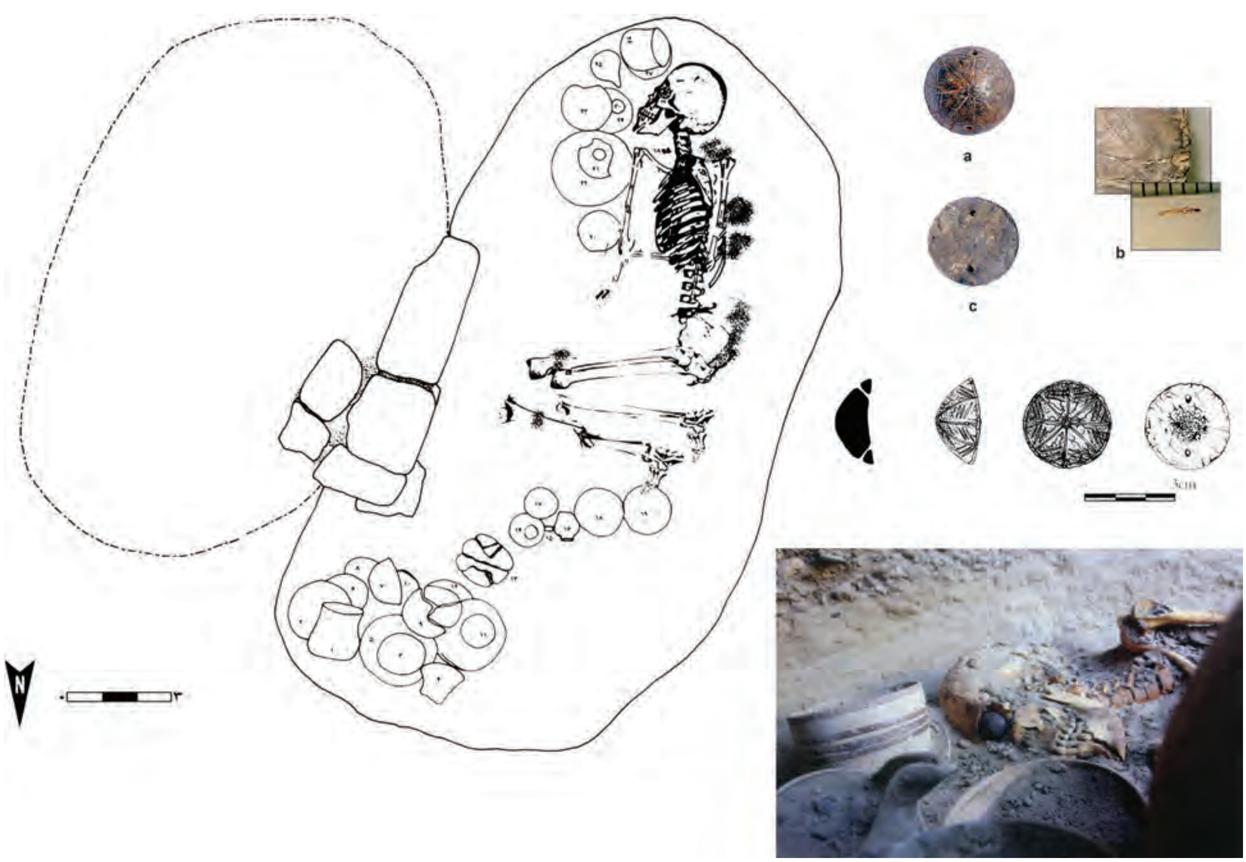

Figure 9.57 Shahr-i Sokhta, grave 6705, plan, view and hemispherical artificial eye (Sajjadi *et al.* 2008: Figures 7, 10–12) (image courtesy of S. M. S. Sajjadi and Hussain Moradi)

Figure 9.58 Shahr-i Sokhta, periods II-III, seals of bronze, stone and bone (Ameri 2020: Figure 3) (images courtesy of Marta Ameri and ISMEO).

Ameri (2020: 12) interprets seal use at Shahr-i Sokhta as principally focused on "local storage and commerce" in keeping with interpretations of the social hierarchy at the site as segmentary rather than highly stratified.

For over a thousand years Shahr-i Sokhta thus functioned as an extraordinary hub of interregional engagement and exchange, connecting widely dispersed communities from across much of Southwest and Central Asia and providing a unique arena for the transmission of materials, artefacts, practices and ideologies, as well as a permanent home for untold thousands of their dead.

Climate collapse: the end of the Bronze Age in south-eastern Iran

At around 2100–1900 BC, the previously flourishing polities of south-eastern Iran all declined and collapsed, as attested in the abandonment of long-lasting major settlements and craft production centres at Tal-i Iblis, Konar Sandal South and North, Tepe Yahya, Shahdad and Shahr-i Sokhta, a collapse at least approximately contemporary with that of the Indus Valley cities to the east (Ratnagar 2004). Evidence from regional surveys for urban or rural settlement is completely lacking for the period *c.* 2000–800 BC (Vidali *et al.* 1976: 250; Sajjadi 1987; Mortazavi 2007; Pfälzner and Soleimani 2015). As Peter Magee (2013: 493–494) starkly expresses it, "there is no identifiable Bronze Age to Iron Age transition in southeastern Iran," a situation that can be associated with wider geographical trends including in areas adjacent to south-eastern Iran such as Pakistan and Southeast Arabia where there are similarly extensive breaks in human settlement. Evidence from palaeo-climate proxies, including from a peat sequence near Jiroft (Gurjazkaite *et al.* 2018) and sediment cores from Lake Hamoun in Sistan (Figure 9.59) (Hamzeh *et al.* 2016), for a significant reduction in summer rainfall patterns across south-eastern Iran and beyond, caused by southwards drift of the Indian Ocean Summer Monsoon system within which south-eastern Iran had been situated (Fleitmann *et al.* 2003; Fallah *et al.* 2017), suggests that the fragile agricultural basis of societies in this region was fatally affected by lack of rainfall from *c.* 2000 BC, with the result that significant human settlement of the region ceased for a period of up to 1,200 years, the earliest Iron Age occupation at Tepe Yahya not commencing until 800 BC (Chapter 11). Evidence for increased exploitation of drought tolerant species such as zebu cattle in the later third millennium BC (Matthews 2002a; Verdugo *et al.* 2019; Frantz *et al.* 2020) suggests that human communities attempted to adapt to the deteriorating environments prior to abandoning their towns and villages.

The proneness of Iran to high levels of dust deposition from westerly winds sweeping across Arabia is also likely to have been a significant driver in ecosystem collapse (Safaierad *et al.* 2020). An associated factor was the decline in demand from Mesopotamian and Persian Gulf elite communities for the luxury materials and artefacts produced by the south-east Iranian centres of production, out-competed by sea-borne traded goods from the Indus Valley and the Oman peninsula (Thornton 2012: 597). Moreover, the shift in Babylonian attention to the north and west, exemplified in Hammurabi's march to Mari and the Middle Euphrates in the 18th century BC and the subsequent favouring of Cypriot and other copper sources over those of Oman and the east (Weeks 2003), yielded the final death-knell to significant Mesopotamian engagement with the region. Pollen core evidence from the

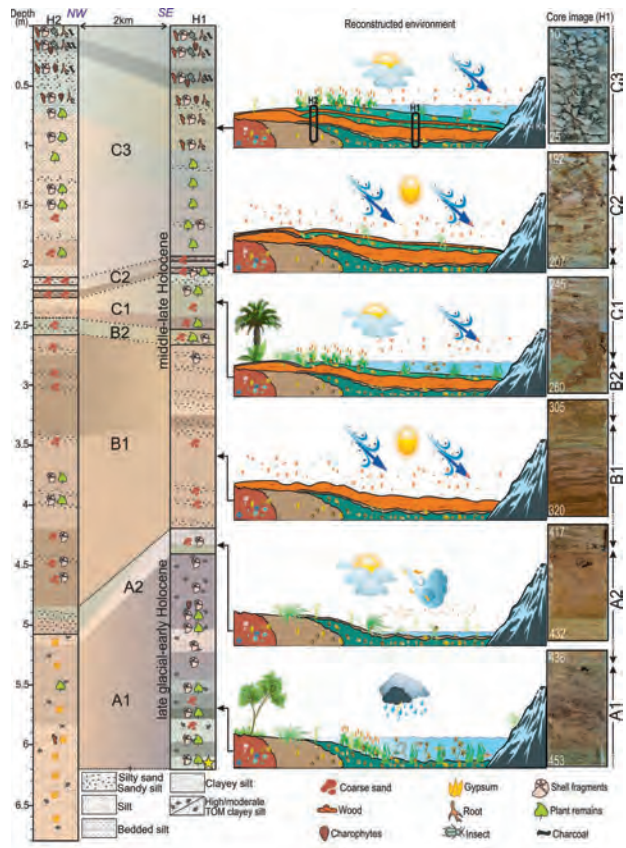

Figure 9.59 Lake Hamoun lake core with reconstructions of environments through time (Hamzeh *et al.* 2016: Figure 2) (image courtesy of Mahmudy Gharaie).

long drought period spanning *c.* 2000–800 BC, however, hints at the persistence of low-level human and herded animal activity in south-eastern Iran, even when agriculture was not being practiced, doubtless in the form of resilient mobile pastoralist lifeways that have otherwise not been detected archaeologically (Gurjazkaite *et al.* 2018).

Terra incognita: north-eastern Iran and its neighbours in the Bronze Age

North-eastern Iran has frequently been seen as a key frontier zone between the oasis communities of Central Asia, from Turkmenistan north-eastwards, and the upland societies of the Iranian central plateau (Sarianidi 1971; Tosi 1973–74; Kohl 1984; Cleuziou 1986; Frachetti and Rouse 2012), but our knowledge of north-eastern Iran throughout the Bronze Age, and the preceding Chalcolithic, is arguably less substantial than that of any other region of Iran (Figure 9.60) (Piller and Mahfroozi 2009: Table 1). As Thornton (2013b) notes in his excellent overview, our lack of information and understanding of this region is due partly to a shortage of concerted programmes of investigation but, more critically, also to systematic failure of teams to produce full, detailed publications on the projects that have taken place. This issue affects especially such major sites as Tepe Hissar, Tureng Tepe, Hotu and Kamarband (Belt) Caves, Shir-i Shian and Sang-e Chakhmaq, although in each case fuller publications are steadily appearing.

The region of north-eastern Iran, often viewed as "the northeastern frontier of the ancient Near East" (Tosi 1973–74: 21), comprises the Alborz mountains eastwards from Tehran, the Caspian plain to the north of those mountains including the fertile Gorgan plain and the plains to the south of the Alborz that fringe the great Dasht-e Kavir. This is a highly distinctive region (Figure 9.61), enjoying relatively abundant water, soil and mineral resources including, in the Alborz mountains, timber, gold, copper and turquoise, materials highly cherished by Bronze Age societies of the region and well beyond, as we have seen. Access to and through

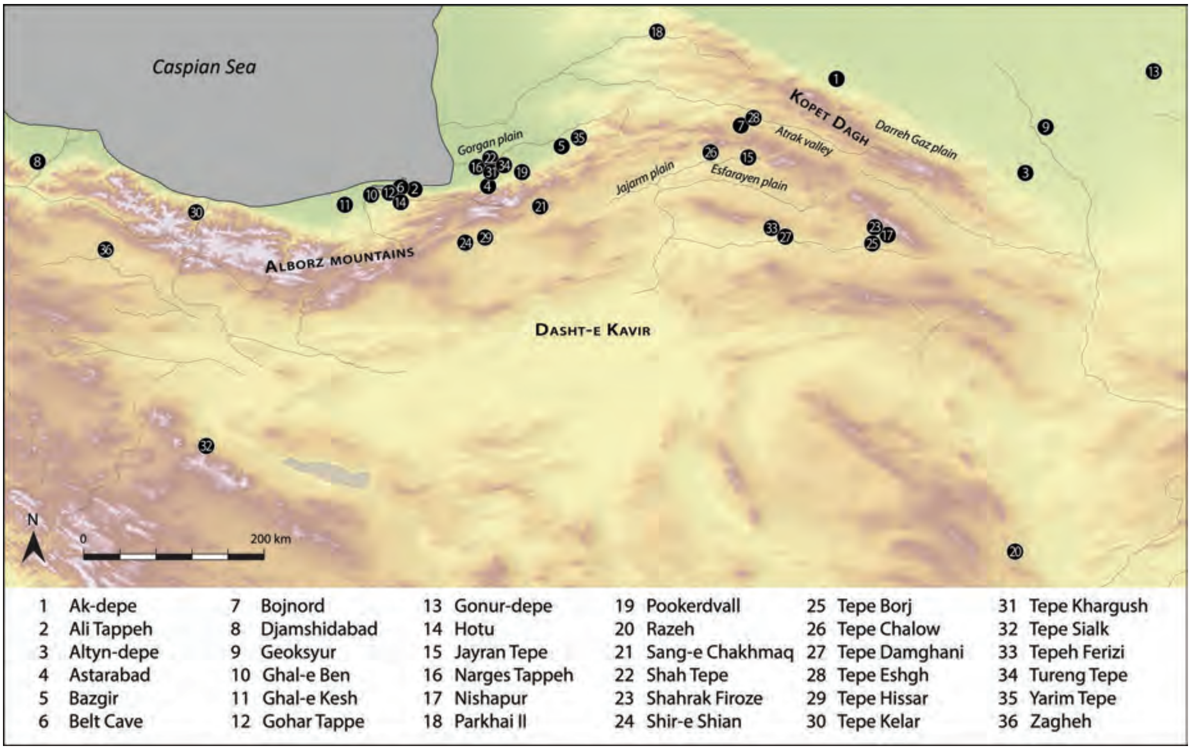

Figure 9.60 Map of northern Iran and adjacent areas in the Bronze Age and Iron Age (Piller and Mahfroozi 2009: Figure 1; Thornton 2013b: Figure 10.1; Vahdati *et al.* 2019: Figure 1).

north-eastern Iran is geographically restricted as the region is bordered by severely challenging ecotones in the form of the Dasht-e Kavir to the south, the Turkoman steppe to the north, and the Kopet Dagh mountains to the east. The lifeways of human societies of north-eastern Iran, and their engagement with the worlds beyond, were greatly shaped by the severe topographic and hydrological variability of their landscapes, characterised by vertical seasonal transhumance of people and animals combined with a transregional east-west axis of communication and trade with neighbours in Central Asia to the east and north and across Iran and beyond to the west.

Archaeological engagement with north-eastern Iran (summarised in Mousavi 2008: 107; Piller and Mahfroozi 2009: 3–4; Thornton 2013b: 182–185), starts with the so-called "Astarabad Treasure," a spectacular hoard of gold and alabaster vessels, bronze weapons and stone figurines found near the city of Astarabad, modern Gorgan (Figure 9.62) (de Bode 1844; Rostovtzeff 1920), which encouraged early excavations at mounded sites in the region of Gorgan, including Tepe Khargush, Tureng Tepe and Shah Tepe (Deshayes 1966, 1969b; Dyson 1991). A major step forward came with Erich Schmidt's large-scale excavations at Tepe Hissar near Damghan, swiftly if partially published by Schmidt (1933, 1937). Other excavated sites, including Belt and Hotu Caves (Coon 1951, 1957), Ali Tappeh Cave (McBurney 1968), Tureng Tepe (Deshayes 1975) and Yarim Tepe (Stronach 1972) generally lack adequate full and final publication. Through the 1970s, excavations at the Neolithic site of Sang-e Chakhmaq (Chapter 5) plus extensive archaeological surveys of regions including the Gorgan plain (Ohtsu *et al.* 2010), eastern Khorasan (Gropp 1995), the Atrak valley (Venco Ricciardi 1980) and the Darreh Gaz plain (Kohl and Heskel 1980) started to construct a chronology for north-eastern Iran and to highlight its interregional connections. In more recent years, advances in our understanding of north-eastern Iran in its wider context have been led by Iranian archaeologists working on the Gorgan plain at Neolithic Pookerdvall (Yousefi Zoshk and Zeighami 2013), at the Bronze Age sites of Bazgir and Narges (Nokandeh *et al.* 2005; Abbasi 2007, 2011, 2015), on the Roshtkhar plain in Khorasan Razavi province (Rezaei *et al.* 2019), in Semnan province (Rezvani 1999), renewed work on Tepe Hissar (Mashkour and Yaghmayi 1998; Roustaei 2010a) and excavations at Gohar Tappe in Mazandaran

Figure 9.61 Alborz mountains in the region of Mt Damavand (photo credit: Petr Kahanek, iStock 1316019339).

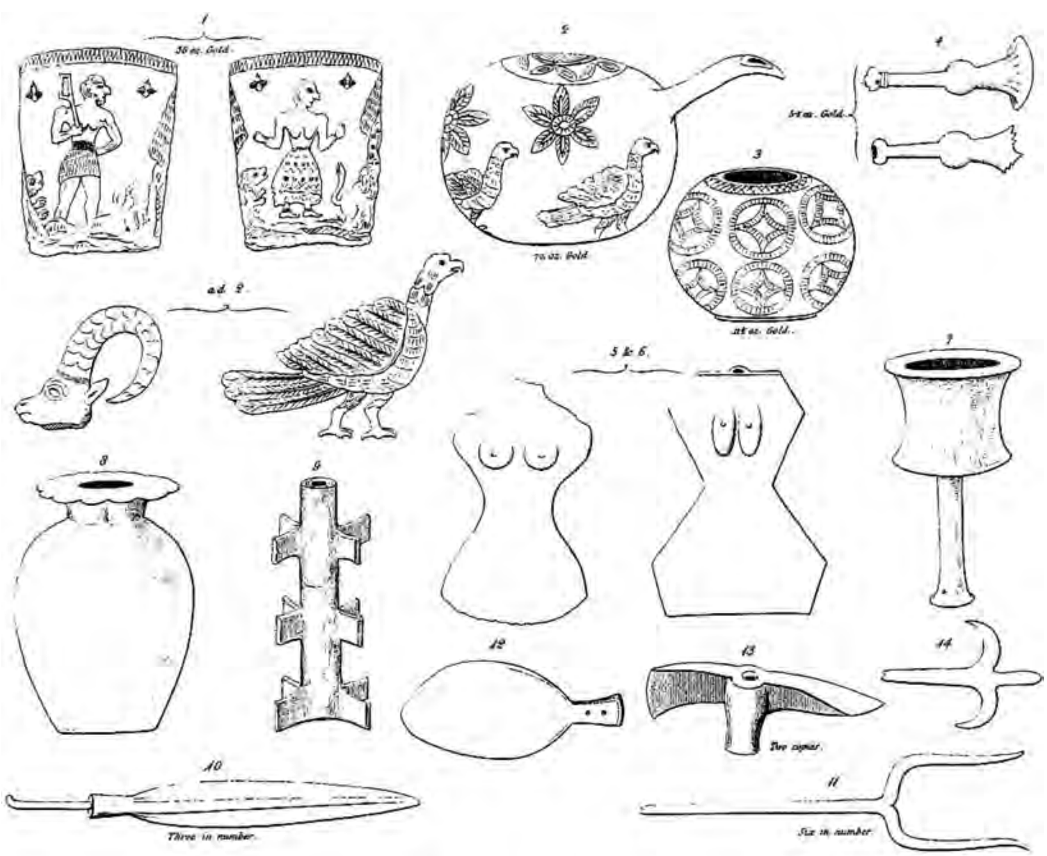

Figure 9.62 The Astarabad treasure (after Rostovtzeff 1920: pl. III).

province (Mahfroozi 2003; Piller and Mahfroozi 2009), supported by palaeo-environmental research on key sites such as Lake Kongor on the Gorgan plain (Shumilovskikh *et al.* 2016).

Within Bronze Age north-eastern Iran, Thornton (2013b: 185; Biscione 1981) highlights a geographical dividing line between communities of the western and eastern halves of the broad region, with material culture of north-central and eastern Khorasan being wholly different from that of sites to the west in eastern Mazandaran, Semnan, Golestan and western Khorasan (Garajian 2006; Mousavi 2008; Vahdati and Francfort 2011). Following Thornton, here we treat these two sub-regions in turn, stressing that the east-west divide in the Bronze Age is very much in keeping with regional patterns and identities we have already traced in the Neolithic and Chalcolithic of north-eastern Iran (Chapters 5–6).

Bronze Age archaeology of Khorasan

While poorly understood, Bronze Age communities of this region participated within the cultural milieu of Namazga sites of southern Turkmenistan (Masson and Sarianidi 1972; Kohl and Heskel 1980; Kohl 1984; Masson 1992; Voigt and Dyson 1992: 169–171; Gropp 1995; Rahbar 1997; Hiebert 2003), as attested by excavations at site such as Tepe Borj, Nishapur-P, Shahrak Firoze, Tepe Damghani, Tepe Chalow and Razeh cemetery (Hiebert and Dyson 2002; Garajian 2006; Vahdati and Francfort 2011; Francfort *et al.* 2014; Rezaei *et al.* 2018, 2019; Vahdati *et al.* 2019, 2021; Vahdati and Meier 2019). Within an ill-defined network of relationships between the Khorasan communities and those over and across the Kopet Dagh in southern Turkmenistan, each side maintained a strong sense of identity, as manifest in variabilities in ceramic assemblages such as the prevalence of burnished grey wares at Khorasan sites and their rarity at Namazga sites in Turkmenistan (Cleuziou 2011; Thornton 2013b: 186). But the evidence from glyptic, chipped stone technology and metallurgy does indicate significant levels of cultural connectivity across the broad region (Hiebert and Dyson 2002). The inhabitants of **Tepe Damghani** and doubtless other sites of this region in the Early Bronze Age cultivated cereals, pulses and grapes (Figure 9.63), gathered fruits and nuts, herded sheep and goat, and hunted wild sheep, goat and gazelle. Recovery of charcoal from Damghani indicates that its environs in the Bronze Age were richer and more varied than today with more wooded zones and considerable scope for pursuit of mixed hunting/herding/farming lifestyles (Francfort *et al.* 2014). Overall, however, our understanding of the socio-cultural and economic dynamics of relationships between Bronze Age societies of far north-eastern Iran and those of the southern fringes of Central Asia remains significantly underdeveloped.

Bronze Age archaeology of Semnan, Mazandaran and western Khorasan

Turning westwards within north-eastern Iran, the scope and detail of available information become slightly more helpful in characterising the region's Bronze Age societies, even if major aspects such as the relationships between the highland and lowland zones of this region are presently "a complete mystery," not least because of inadequate publication of excavated sites (Thornton 2013b: 187). Renewed investigation of **Tepe Hissar** (Dyson and Howard 1989; Roustaei 2010; Thornton *et al.* 2013) enabled situation of Schmidt's results within more secure chronological and geographical contexts, in particular underlining the significance of Tepe Hissar in period II (*c.* 3400–3000 BC) as a major regional centre for processing of lapis lazuli, alabaster, copper alloys and lead/silver (Pigott 1989; Tosi 1989; Roustaei 2004; Thornton 2009, 2012). From the early third millennium BC, ceramic assemblages across north-central and north-eastern Iran are marked by the presence of monochrome grey wares that steadily replace the local burnished, incised or painted ceramic styles, as at Tepe Hissar in periods II-III (Dyson 1991; Cleuziou 2011).

Figure 9.63 Tepe Damghani, seed and fruit remains (after Francfort *et al.* 2014: pl. 11).

Identifiable impact of the Proto-Elamite horizon on north-eastern Iran was minimal, as we saw in Chapter 7. While settlement at Tepe Hissar, period IIIA, appears to subside in conjunction with the collapse of the Proto-Elamite phenomenon, Bronze Age occupation of the eastern Caspian littoral zones thrives during the earlier third millennium BC, with **Tureng Tepe** on the Gorgan plain arguably replacing Tepe Hissar as the major focus of lapis lazuli processing from 3000 BC (Wulsin 1932; Deshayes 1968, 1969a, 1975; Olson and Thornton 2021). The mounds of Tureng, up to 35 m high and 35 ha in area, form one of the most important sites of the Gorgan plain and are subject to ongoing programmes of publication of both the French (Bessenay-Prolonge and Vallet 2019) and the American (Olson 2012, 2020; Olson and Thornton 2021) excavations at the site that exposed levels dating from Late Chalcolithic to Iron Age (Figure 9.64).

This material richness is matched at Parkhai II in the Sumbar valley in south-western Turkmenistan where Early Bronze Age graves contained a wealth of lapis, silver and other artefacts (Khlopin 2002), which may be connected to the rise of major trade and consumption centres in the Namazga IV period of southern Turkmenistan, including Ak-depe and Altyn-depe (Masson 1992; Thornton 2013b: 192). In the early third millennium BC, occupation at the site of **Gohar Tappe** in eastern Mazandaran expanded to some 30 ha with a massive mudbrick city wall, making it one of the most substantial sites of the broader region, with the settlement reducing in scale through the later third millennium BC (Figure 9.65) (Piller and Mahfroozi 2009; Piller 2012c).

Other key sites of the late fourth-early third millennia BC of eastern Mazandaran include Tepe Kelar, Ghal-e Kesh and **Ghal-e Ben** (Figure 9.66) where significant occupation spans *c.* 3200–1500 BC (Afshar *et al.* 2019; Fazeli Nashli *et al.* in press-a). These sites have burnished grey ware ceramics indicating strong connections with north-eastern Iran and, as mentioned in Chapter 8, they represent the eastern limits of the spread of ETC ceramics in the mid-third millennium BC. This is a heavily forested region differing in character considerably from the plains of the north-central plateau and north-eastern Iran. Subsistence depended on a combination of animal husbandry and cultivation. Faunal remains from Ghal-e Ben include cattle, sheep, goat and pig, while cereals and pulses were grown.

In the mid-later third millennium BC, **Tepe Hissar** (level IIIB) returned to regional prominence, as attested by many rich burials (Schmidt 1937: 232–261; Afshar 2017) as well as exotic finds from the Burned Building including an elaborate hearth or household shrine with niches in the form of seated female figures (Figures 9.67–9.68) (Dyson 1972, 1977b). Items of material culture at this time, including fine, pattern-burnished grey ware, beads, pins and pendants, and fenestrated braziers from Gohar Tappe and Tureng Tepe, amongst other sites, demonstrate a high level of achievement in the production of quality artefacts, some of which may have had cultic functions (Piller and Mahfroozi 2009; Olson 2012). There is also significant evidence in the form of decorated bronze, ceramic and soft-stone artefacts, mainly from illicit excavations, for engagement of communities of the north-eastern region with their contemporaries in the Kerman-Jiroft region to the south (Vahdati and Meier 2019).

Figure 9.64 Tureng Tepe, Mound C, copper/bronze objects (Olson and Thornton 2021: Figure 10). a: TT392; b: UPM 32–41–44/TT540; c: TT113; d: UPM 32–41–45/TT541). Not to scale (images courtesy of Kyle Olson/UPM).

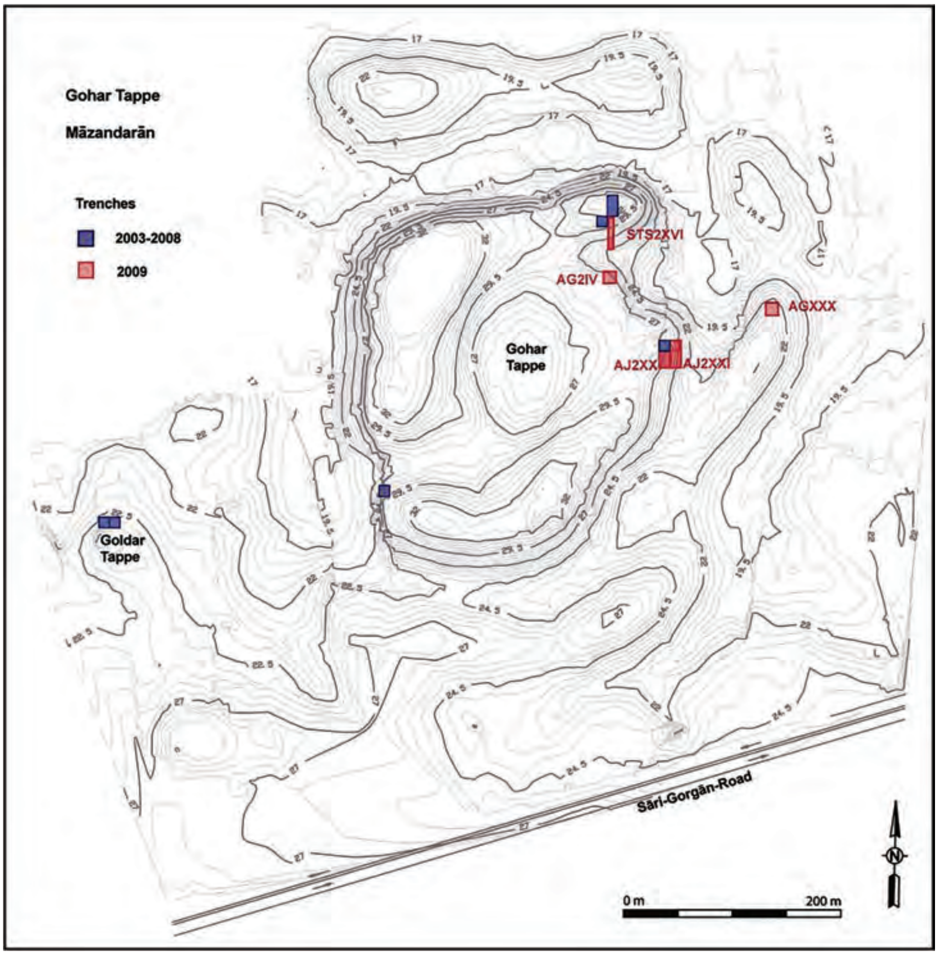

Figure 9.65 Gohar Tappe, contour plan of the mound (Piller and Mahfroozi 2009: Figure 2) (image courtesy of Ali Mahfroozi and Christian Piller).

Figure 9.66 Ghal-e Ben, aerial view of the site (photo credit: Loghman Ahmadzadeh and Hassan Fazeli Nashli).

Figure 9.67 Tepe Hissar, excavations of Burned Building in 1932 (after Dyson 1977a: 419).

Figure 9.68 Tepe Hissar, plan of Burned Building (after Dyson 1977a: 420).

BMAC and the end of the Bronze Age in north-eastern Iran

In concert with almost all other areas of Iran, the north-eastern regions of Iran host a major decline in settlement and in evident socio-political complexity at the turn of the third-second millennia BC. At **Tepe Hissar**, the sophisticated architecture of level IIIB was replaced by poorly planned structures at the start of Hissar IIIC (Schmidt 1937: 155), at the same time as the appearance of >400 richly furnished elite burials (Schmidt 1937: 306), while at **Tureng Tepe** a massive two-stepped high terrace of mudbrick was built, covering some 5500 m^2 and paralleling examples of similar date in Central Asia (Figure 9.69) (Deshayes 1977; Bessenay-Prolonge and Vallet 2019). The terrace is provisionally dated to the mid-late third millennium BC, as is a series of up to 80 distinctive anthropomorphic "naked woman" clay figurines (Figure 9.70) (Bessenay-Prolonge 2017; Olson 2020: Figures 6–7). Detailed contextual analysis by Kyle Olson (2020) indicates that the Tureng figurines were recovered in distinct clusters in association with other materials in areas of domestic occupation and only once in a human burial, and that they may have fulfilled important roles within the context of personal and social identity with a focus on issues of adornment. At least 150 Bronze Age and Iron Age burials were also excavated at Tureng, with grave goods indicating widespread connections to Central Asia as well as to south-eastern Iran (Bessenay-Prolonge and Vallet 2019). Connections eastwards as far as the Indus Valley are attested by etched carnelian beads and other artefacts in small quantities (Chakrabarti and Moghadam 1977; Possehl 2012). Tureng Tepe was abandoned by *c.* 1700–1600 BC and subsequently reoccupied in the Iron Age.

At approximately the same time, items of material culture related to the Bactria-Margiana Archaeological Complex (or Culture; BMAC or Namazga V–VI), *c.* 2250–1700 BC, also known as the Oxus Civilization

Figure 9.69 Tureng Tepe, main mound under excavation in 1975 (Bessenay-Prolonge and Vallet 2019: Figure 2) (image courtesy of Regis Vallet).

Figure 9.70 Tureng Tepe, anthropomorphic figurines (Olson 2020: Figure 6). Photographs of the University of Pennsylvania Museum Corpus; 1–32–41–69, TT#025; 2–32–41–68, TT#024; 3–32–41–67, TT#348; 4–32–41–62, TT#643; 5–32–41–64, TT#364; 6–32–41–42 TT#577; 7–32–41-25, TT#648; 8–32–41–65, TT#321; 9–32–41–66, TT#323; 10–32–41–70, TT#174; 11–32–41–63, TT#269; Used with permission from the Near Eastern Section of the University of Pennsylvania Museum, photographs 1 and 5–11 by Kyle Olson (images courtesy of Kyle Olson/UPM).

(Lamberg-Karlovsky 1994; Lyonnet and Dubova 2021) or the Greater Khorasan Civilization or GKC (Vahdati *et al.* 2019; Biscione and Vahdati 2021: 543), are found at sites across north-eastern Iran, sometimes with local grey ware pottery (Hiebert and Lamberg-Karlovsky 1992; Lamberg-Karlovsky 2002: 69–73; Vidale 2018a; Biscione and Vahdati 2021). The north-eastern corner of Iran, including the regions of Mashhad, Nishapur and Sabzevar, along with much of south-western Turkmenistan, centring on the Kopet Dagh, can be characterised as a formative area for the BMAC, with subsequent west and southwards expansion of BMAC cultural traits into Khorasan and Sistan (Biscione and Vahdati 2021: Figure 19.2). Characteristic BMAC items include distinctive grooved stone columns as found on top of the high terrace at Tureng Tepe (Deshayes 1975; Bessenay-Prolonge and Vallet 2019), in period IIa at Shah Tepe (Arne 1945: 282), elite burials and hoards in period IIIC at Tepe Hissar (Schmidt 1937: pl. 61; Afshar *et al.* 2019), burials at Narges Tappeh (Abbasi 2007) and prestige objects including a striking silver vessel with depictions of real and mythological animals from excavations at **Shahrak Firoze** in Neyshabour (Figure 9.71) (Basafa and Davari 2019: Figures 2–3), and a composite figurine from a looted grave at Gavand (Figure 9.72) (Biscione and Vahdati 2021: Figure 19.4). The poorly understood site of **Tepeh Ferizi** on the Sabzevar plain of western Khorasan appears to have been a very large BMAC settlement (Garazhian and Papoli Yazdi 2005; Sabori 2014). A BMAC grave within a possible cemetery encountered during building work at **Tepe Eshgh** near Bojnord yielded a human and a dog skeleton accompanied by vessels of Namazga VI type. Traces of ash and burning in the Tepe Eshgh grave match the evidence for similarly fiery funerary practices across the BMAC world, likely connected with shared religious beliefs (Vahdati 2014). Excavations at **Bazgir** on the Gorgan plain have uncovered an elite burial contemporary with Hissar IIIC comprising a copper-lined chamber containing some 700 high-status objects, principally copper and bronze vessels (Nokandeh *et al.* 2005). The unique Astarabad Treasure (Figure 9.62), found near Gorgan, contains both elements of BMAC style, including miniature "trumpets," echoing real trumpets found at BMAC sites such as Gonur-depe and at Tepe Hissar and Shahdad and possibly used in elite hunting activities (Lawergren 2003), and also items connected more to local Hissar IIIC assemblages, such as female figurines made of stone plates.

Figure 9.71 Shahrak Firoze, silver vessel (Basafa and Davari 2019: Figures 2–3) (images courtesy of Hassan Basafa).

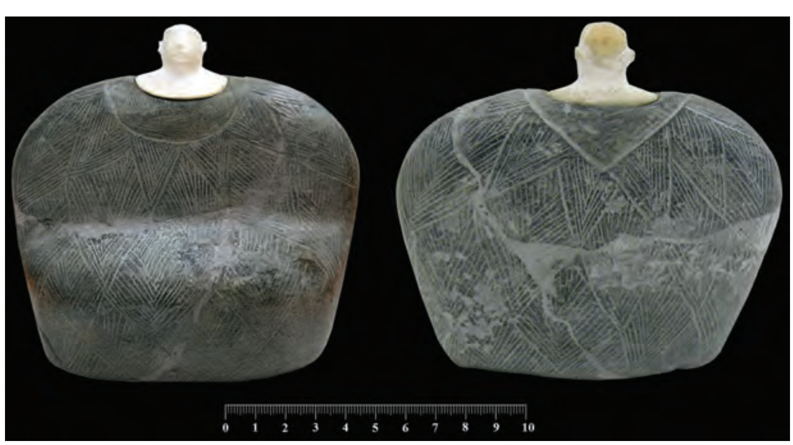

Figure 9.72 Gavand, southern Khorasan, composite figurine from a looted grave (Biscione and Vahdati 2021: Figure 19.4) (image courtesy of Ali Vahdati).

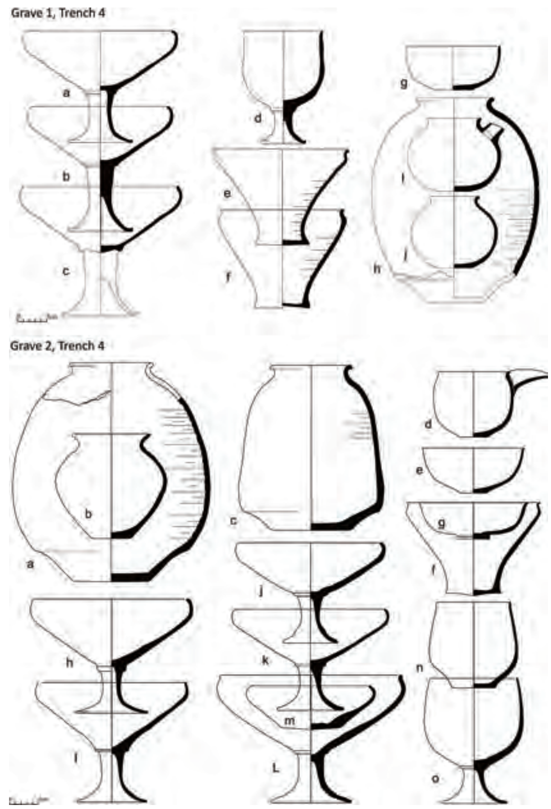

Figure 9.73 Tepe Chalow, BMAC ceramics from graves (Vahdati *et al.* 2019: Figures 10–11) (image courtesy of Ali Vahdati).

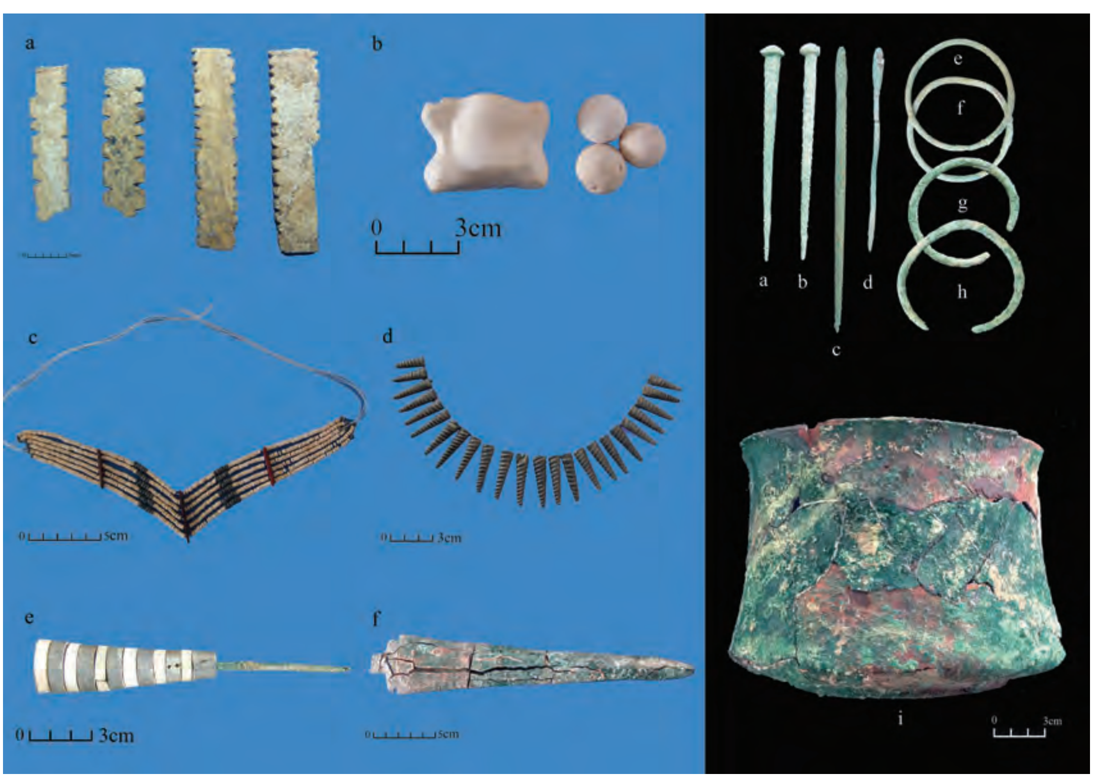

Figure 9.74 Tepe Chalow, grave goods from BMAC graves (Vahdati *et al.* 2019: Figures 17–18) (images courtesy of Ali Vahdati).

Strikingly, at few of these sites are there significant traces of Namazga V–VI pottery, with the notable exception of the rich BMAC cemetery at the large site of **Tepe Chalow** near Sankhvast east of Jajarm, the westernmost manifestation of a significant BMAC presence (Figures 9.73–9.74) (Biscione and Vahdati 2011; Sołtysiak *et al.* 2016b; Dana and Hozhabri 2019: 132–134; Vahdati *et al.* 2019, 2021). Surface ceramics at Chalow indicate occupation over an area of some 40 ha spanning Late Chalcolithic to Late Bronze Age, the locus of settlement shifting horizontally according to westwards avulsions of the Darband river (Vahdati *et al.* 2019). BMAC-style and other finds at Chalow, principally from excavated graves, include a stone rod or sceptre, carved stone weights or "hand-bags," tanged daggers, items of jewellery and grooved stone columns. Faunal remains from Chalow are dominated by sheep-goat but with significant representation of cattle and equids, while archaeobotanical evidence suggests storage of grape products, possibly wine, in ceramic vessels and cultivation of barley and wheat with an absence of pulses. Ceramics from Chalow show connections both eastwards with the world of BMAC as well as westwards with sites on the Gorgan plain and the Damghan region, such as Shah Tepe and Tureng Tepe. The location of Chalow on an important route connecting the Gorgan plain with Nishapur and beyond was clearly significant in facilitating the cosmopolitan nature attested in its surviving material remains, and it is possible that transregional trade in wine formed a major part of economic activity at this time (Tengberg 2013).

Alongside the evidence from Tepe Yahya IVA (see above), these occurrences of BMAC culture in Iran, along with craniometric measurements of human remains from Hissar IIIC, suggest the movement of BMAC peoples and materials into Iran at *c.* 2000 BC (Hiebert 1998; Hemphill 1999). Such movement, possibly by means of wheeled carts pulled by bulls as attested in model form at Altyn-depe (Kirtcho 2009) as well as by the horses, donkeys and Bactrian camels attested at BMAC sites in Central Asia (Hiebert and Lamberg-Karlovsky 1992: 3; Bonora 2021: 747–753), may have been stimulated by a desire of BMAC communities to gain closer access to the material resources of Iran and neighbouring regions, above all semi-precious stones and metals, which feature prominently at BMAC sites (Francfort 2005; Sarianidi and Dubova 2010; Frachetti and Rouse 2012: 695). In their pioneering analysis, Hiebert and Lamberg-Karlovsky (1992: 11) characterise the BMAC as "a facsimile of a state structured polity of power" that underwent an episode of dramatic expansion into eastern Iran followed by an equally dramatic collapse. Recent aDNA analysis intriguingly suggests dominant genetic inheritance, up to 65%, by BMAC populations from ancestral Iranian Neolithic populations ultimately deriving from the central Zagros (Narasimhan *et al.* 2019). In a sense, then, in migrating to Iran incoming BMAC peoples were returning to their erstwhile distant homeland. Beyond the formative and core zones of the BMAC in north-eastern and eastern Iran, BMAC impacts and influences can be traced in material evidence distributed over a much wider extent of Iran, as far west as Susa in Khuzestan (Mutin and Lamberg-Karlovsky 2021). As mentioned above, many of the burials at Shahdad include objects such as stone containers, ceramics and metal axes and seals showing strong BMAC connections.

Steinkeller (2014b) draws on texts and archaeological evidence to propose that Tukrish, a toponym often mentioned in Mesopotamian texts alongside Marhashi, Meluhha and Makkan, and renowned as a source of lapis lazuli and gold as well as of finished luxury objects, may have been the ancient name of the BMAC homeland. Detailed analysis of the material evidence from both southern Iran and western Central Asia in the mid-later third millennium BC paints a picture of "an integrated cultural complex of two distinctive civilizations probably developed on a reciprocal utility where the nomadic entities played an important role in the transmission of artistic elaborations, writing systems, beliefs, traditions, and knowledge" (Ascalone 2014: 14). A fundamental attribute of the region at large was the recurrent interaction between settled farmers and more mobile pastoralist groups. While the large-scale Oxus or BMAC settlements of southern Turkmenistan, the Murghab alluvial fan in particular, were founded upon intensive agricultural exploitation of the alluvium, at the same time the evidence from contemporary pastoralist campsites on the Murghab plain suggests that farmers and pastoralists, while engaged in mutually beneficial technological and material exchanges retained their distinct identities through many centuries of engagement, as manifest in differing ceramic traditions (pastoralist: handmade, coarse; farmer: wheelmade, fine) and food procurement strategies (pastoralist: sheep-goat, minimal plants; farmer: cattle, sheep-goat, cereals, pulses) (Rouse and Cerasetti 2018).

In any case, by the turn of the third-second millennia BC the overall impression is of collapse on a massive scale across all of eastern Iran and well beyond. As discussed above with regard to the end of the Bronze Age in south-eastern Iran, to what extent this episode of collapse in the northeast can be associated with a suggested downturn in rainfall leading to agricultural failure (Fouache *et al.* 2010; Walker and Fattahi 2011; Sharifi *et al.* 2015; Shumilovskikh *et al.* 2016), or to over-exploitation by human communities of natural resources (Mousavi 2008), or both, is difficult to address with available palaeo-environmental evidence from the region, but the scale of the collapse argues for a cause or causes of supra-regional significance. Evidence for Indus Valley connections with Iran, albeit slight, also breaks down at about this time and does not reappear for many centuries (Possehl 2012: 769).

In sum, as Thornton argues (2013b: 195), north-eastern Iran can reasonably be viewed as both an interregional frontier zone between the greater Near East to the west and Central Asia to the east, and an intraregional frontier zone between Khorasan to the east and Semnan, Gorgan, Damghan and Mazandaran to the west. These dual dynamics of intercultural interaction, at the local and transregional scales, combined with the mineral and arable wealth of much of the region, acted as powerful drivers in structuring relationships between towns, villages and, perhaps, states throughout the Bronze Age of north-eastern Iran and its neighbours.

It is difficult to trace developments across eastern Iran in the centuries following the late third-early second millennia BC collapse. At Tepe Hissar, early second millennium BC levels are attested only by ceramic and metal finds and the site is then abandoned until the early first millennium BC (Schmidt 1937; Bovington *et al.* 1974; Mousavi 2008:110; Roustaei 2010a; Thornton 2013b: 195), while other sites to the northeast such as Bazgir, Narges and Tureng Tepe have evidence of late BMAC occupation contemporary with Namazga VI, with Late Bronze Age occupation at Tureng Tepe ending by *c.* 1700 BC, as is also the case at Yarim Tepe (Gorgan), Shah Tepe and Tepe Chalow (Deshayes 1967, 1973; Nokandeh *et al.* 2006; Abbasi 2007; Mousavi 2008). Concerning the centuries of the Late Bronze Age in eastern Iran, *c.* 1800–1250 BC, we are more or less completely in the dark, with rare points of light from levels at Ghal-e Ben, Gohar Tappe, where well-furnished graves have been excavated (Figure 9.75) (Piller and Mahfroozi 2009; Sołtysiak and Mahfroozi 2009; Sołtysiak *et al.* 2010b), and an unpublished cemetery at Shahrud and perhaps at Tureng Tepe too (Deshayes 1973; Mousavi 2008). Other cemeteries at Djamshidabad west of the Sefid Rud and in the Talesh region suggest a significant Late Bronze Age presence across the southern Caspian region, about which we know very little (Piller 2012: 125).

Surveys of the Roshtkhar plain in Khorasan Razavi province bordering Afghanistan to the east and Turkmenistan to the northeast, and of the Bojnord, Jajarm, Darreh Gaz and Esfarayen plains in North Khorasan province, have detected sites of both Late Bronze Age (Namazga VI) and Early Iron Age date, the latter characterised by exclusively handmade ceramics of so-called Yaz I type indicating influence from Turkmenistan at this time (Chapter 11; Kohl and Heskel 1980; Boucharlat *et al.* 2005; Vahdati 2014: 26, 2016, 2018; Dana and Hozhabri 2019; Rezaei *et al.* 2019). Understandably, the material traces of the Yaz culture of southern Turkmenistan have been designated as "strikingly utilitarian" (Buławka 2017: 143) in marked contrast to the luxury-laden hierarchical societies of the region in the preceding centuries of the Bronze Age.

Eastern Iran in the Bronze Age: the nature of society

How most effectively might we interpret the wealth and diversity of material evidence so far recovered from the Bronze Age societies of eastern Iran as reviewed above? How were the societies of the region structured and organised? Can they usefully be compared with their contemporaries in other regions of Southwest Asia such as Lower Mesopotamia, Upper Mesopotamia and Anatolia? What were the critical factors shaping the rise, development and final collapse of the Bronze Age societies of eastern Iran? In this concluding section we address these questions in a more synthetic manner, while admitting that much of our understanding needs further enhancement from systematic programmes of radiocarbon dating and the integrated application of scientific archaeology and palaeo-environmental research. Much work remains to be done.

Figure 9.75 Gohar Tappe, Late Bronze Age grave AJ2XX-2 (Piller and Mahfroozi 2009: Figure 6) (image courtesy of Ali Mahfroozi and Christian Piller).

Firstly, there can be little doubting the key role of climate and environment both in enabling the rise and thriving of the societies of Bronze Age eastern Iran, and in precipitating or furthering the collapse of those societies, at least in the form of large-scale, settled communities, at some time around the end of the third millennium BC. As we have stressed, the environments of eastern Iran, in particular, could be extremely harsh so that even small changes in precipitation, dust deposition or temperature regimes could have had devastating consequences for the availability of water and the viability of associated arable agriculture, pasturing and human settlement. While the fluorescence of the Early Bronze Age societies of south-eastern Iran appears to have occurred within a context of increased precipitation and decreased dust deposition in the earlier third millennium BC, as revealed by a Jazmurian sediment core (Vaezi *et al.* 2019), a major reversal of these environmental trends across the region in the latter third millennium BC (Gurjazkaite *et al.* 2018) led directly to agricultural collapse and the large-scale abandonment of settlements in eastern Iran and well beyond. We would expect there to have been major movements of people associated with this collapse, migrating to more favourable areas of Iran and adjacent regions, but our archaeological resolution is not fine enough to detect these movements. Some palaeo-environmental evidence hints at on ongoing low-scale human presence even through the darkest decades, but our insight into this episode is minimal.

The Early Bronze Age polities of south-eastern Iran have been characterised as sharing "similar lifeways based on agricultural production and intensive craft production within a ranked society of low complexity" (Pittman 2013a: 317; see also Pittman 1984; Kohl 2007: 225–231). What is the evidence for this distinctive characterisation? Many aspects of the development of complex societies in all of Iran through the Bronze Age remain obscure and hugely under-researched. To take one major instance, when we discuss the issue of "urban" or "urban-scale" sites and societies in Iran, what do we really understand about how major sites such as Konar Sandal or Shahr-i Sokhta operated at this time? How were they structured, who was in control, was control consensual or coercive, and what kept high densities of people together beyond a need to nurture, feed and protect themselves? At what level were decisions made about the allocation of land, access to cherished resources, participation in civil projects, timing and scale of religious festivals and construction of communal buildings, for example? Given the mounting evidence for considerable global diversity in the pathways people pursued to early urbanism (Feinman 2018), can the development of complex societies in the Late Chalcolithic (Chapter 6) and into the Early Bronze Age of Iran (Chapters 7–10) be usefully compared with other attested examples of pristine urban development such as those in Lower Mesopotamia, or in Upper Mesopotamia where a distinctive early urban pattern of extensive low-density occupation zones and flexible use of urban space has been discerned as characteristic (McMahon 2020) that might serve as a model for early Iranian urbanisation?

In a volume devoted to "the development of urbanisation, production and trade" on the Bronze Age Iranian plateau, Jan-Waalke Meyer *et al.* (2019: 353) suggest that during the third millennium BC only Shahr-i Sokhta, Konar Sandal and Shahdad, and possibly Tall-i Malyan, can be considered as truly urban centres, with more "clearly visible urbanisation" developing only in the Old Elamite period in Khuzestan (Chapter 10) from *c.* 2000 BC. While sites such as Shahdad and Shahr-i Sokhta are undoubtedly urban in scale, achieving areal extents of up to 200 ha, we have little idea of the intensity and density of occupation at any single period and we also need to consider the impact of horizontal stratigraphy by which the foci of settlement may have drifted across the settled area according to the rise and fall of individual households or other micro-environmental factors. Excessive erosion and deflation by wind of entire levels of settlement at long-lasting sites also contribute to the challenges in investigating diachronic settlement histories at the Bronze Age sites of eastern Iran. In some cases, all that remains of entire towns is the deepest pits and graves dug below the occupation layers of the settlement.

Even basic features of early Iranian urban-scale sites such as estimates of areal occupation period by period, identification of urban zones for residential quarters, craft areas, open spaces, temples and palaces, relations of urban populations with their hinterlands and their contemporary urban and rural communities near and far remain largely hidden in the shadows of Iran's past (Sajjadi 2015), with some notable exceptions as explored in this chapter, and are likely to do so for some time to come. As articulated by Eskandari (2019: 202),

> the EBA urbanization of southeastern Iran can be approached through our increasing knowledge of large and densely populated centers, an increased understanding of the patterns of occupation surrounding these centers, socio-economic stratification, long distance trade, craft specialization and an emergence of managerial agencies.

These are all key issues where significant advances in knowledge need to be made before we can satisfactorily address the specifics of early Iranian urban societies.

With the currently modest exception of the Linear Elamite texts from Konar Sandal South and Shahdad, a notable feature of the societies of eastern Iran is the shortage of evidence for writing, an absence that Hiebert and Lamberg-Karlovsky (1992: 11, italics in original) insist should not disqualify large settlements of the region from being classified as cities:

> We note that within the context of Egypt, Mesopotamia, and the Indus Valley, the designation of a community as a "city" is usually taken to be coterminous with the emergence of the state *and* literacy. On the vast stretches of the Iranian Plateau and Central Asia archaeologists have been reticent to use the term "city" for certain settlements and restrained in arguing for the presence of "state" polities. We believe that this view is not only in error but that it continues to submerge the central importance of both particular sites and entire regions within this vast area. Altyn-depe, Mundigak, Shahr-i Sokhta, and Shahdad, are but a few examples of important cities within their respective geographical domains. Within each of their locales excavations and surveys have offered abundant evidence that these cities held sway over the economic and political development of the surrounding region.

Holly Pittman's (2019) suggestion that the widespread use of cylinder seals in south-eastern Iran and the associated glyptic iconography may have in effect stood in for writing to some extent addresses this issue as well. It might further be argued that the very lack of evidence for writing amongst the societies of eastern Iran throughout the third millennium BC, after and in contrast to the brief Proto-Elamite horizon, coupled with the great diversity and interregional connectivity of glyptic iconography attested at many of the major sites of the region, is suggestive of a less centralised organisation of economic activity amongst and between these communities. In Chapter 7 we saw that in the Proto-Elamite case, the role of writing was above all to administer and control the rural economy with no obvious concern for transregional trade and exchange. We have no evidence for centralised control of economic activity within the societies of Bronze Age eastern Iran after the Proto-Elamite horizon. How then might trade and exchange have been organised?

Trade was clearly of some significance to the societies of eastern Iran, even if production of high-quality goods appears to have been above all for local consumption, in life and in death. Still, the necessary raw materials had to be obtained and many finished items were traded on in multiple directions. Do the Konar Sandal South sealings allow us to envision a system of "merchant-like, commercial, behavior" as Pittman (2019: 284) argues? If so, we have little idea of the societal mechanics of how such trade was organised and controlled, including the possible role of markets (Lamberg-Karlovsky 2009). The absence of evidence for state-level bureaucratic involvement in any aspect of economic activity, however, suggests that trade may have been organised and conducted at lower-scale levels, such as between individual families, households or neighbourhoods, to each of whom specific seals or groups of seals may have belonged, styled according to their owners' homeland, family affiliation or other distinctive attribute. The diversity of iconography might further attest a role of key sites such as Konar Sandal South and Shahr-i Sokhta as "intermediary markets" (Casanova 2019: 308), where people from widely dispersed regions of Southwest and Central Asia went specifically to engage in trade. Future studies of clay sealings, including from a functional point of view, and through analyses such as pXRF of sealing clays, could usefully inform on issues such as these (Matthews and Richardson 2018, 2020).

One surprising absence, including at key sites such as Tepe Hissar and Tepe Yahya, in the material evidence for trade across eastern Iran in the Bronze Age is tin, in sharp contrast to Luristan in western Iran where tin is commonly attested, as we saw in Chapter 8. This absence is notable because of the known tin sources in Afghanistan/Bactria where lapis lazuli and other materials were being sourced by these same communities (Cuénod *et al.* 2015). It seems that the inhabitants of Luristan were able to access tin readily from their proximate sources at Deh Hosein (Pigott 2021), while communities of the east were either conservatively retaining their pre-tin modes of bronze production, or for some reason were excluded from the Bactrian tin trade by competitors such as the burgeoning Sumerian cities of Lower Mesopotamia.

More positive evidence for east-west engagement by the mid-later third millennium BC comes in the form of arguably high-status games, in particular the so-called "Game of 20 Squares," which may have been connected to divination (Dunn-Vaturi and Schädler 2006: 19). Such board games have been recovered from sites in Lower Mesopotamia – the famous "Royal Game of Ur" – and from Shahr-i Sokhta, Tepe Yahya and the Jiroft region in eastern Iran, as detailed above. Coupled with the evidence for the development of palatial architecture as attested in period III at Shahr-i Sokhta and at several cities of Lower Mesopotamia, this evidence suggests that in the decades prior to their collapse the societies of south-eastern Iran, at least, may have shifted towards a more elite-driven model of social organisation with increasingly centralised control over resource distribution, but as ever the evidence on this point is in need of significant augmentation only future research may provide.

10 Elam in the world of Bronze Age Southwest Asia, 2900–1100 BC

Elam: key issues

In previous chapters we have recurrently traced the dynamics of interaction between the societies of the Iranian upland regions and the adjacent Mesopotamian plains to their west, singling out the site of Susa as a nexus of cultural change in the later prehistoric periods. Fundamental to shifting political, cultural and economic relations between Elam, the Iranian highlands and the Mesopotamian lowlands in the Bronze Age, as in all periods, was the differential distribution of key resources such as metals, timber and semi-precious stones including carnelian and lapis lazuli, and the diverse routeways and means, peaceful or otherwise, employed by powerful lowland states to secure access to those resources (see Figure 9.1) (T. Potts 1993, 1994). From the start of the Bronze Age onwards we are able for the first time to combine the sources and approaches of archaeology and history, of a kind, in addressing the past of a significant region of Iran (Niknami and Hozhabri 2020 contains valuable overviews of the archaeology of several of Iran's historical periods). As ever, we need to exercise caution and nuanced awareness in following such an integrated agenda. The divergent research strategies of archaeologists and historians, individually and according to their disciplinary traditions and capabilities, mean that the integration of multiple strands of evidence is challenging. In this chapter we continue to maintain the focus specifically on the archaeological evidence and issues while taking advantage of the fact that, for the first time, we are able to provide chronological frameworks that incorporate, however tentatively, the evidence from historical documents alongside the archaeology including, for example, excavated stratified sequences with Elamite ceramic and metalworking assemblages (Gasche 1973; Bridey 2018; McCall 2018).

At the same time in a manner very different from archaeology, the historical evidence provides us with tantalising glimpses of specific Iranian individuals and their characters that add a new type of life to the material evidence of the past addressed through archaeology. Elamite and Elam-related texts from the third to first millennia BC enable historians to address issues that may significantly complement approaches through ahistorical archaeological evidence (as richly recounted throughout the synthetic studies in Álvarez-Mon *et al.* 2018a). Thus, investigations of important areas such as the role of women in ancient Elam (Daems 2018; Dabbagh 2019), including as depicted in Elamite art (Carter 2014), the nature of religious beliefs, festivals and cultic practices (Quintana 2018), the intricacies of bureaucratic procedures (Basello and Giovinazzo 2018), and all other aspects of Elamite "cuneiform culture" (Basello and Ascalone 2018) each make their contribution to an ever-richer picture of lifeways in ancient Elam. But where and what is "Elam"? As ever, we need to begin by getting our bearings.

The name "Elam" comes not from the local peoples of the region so designated but is a name devised and applied from outside, "coined by Mesopotamian scribes gazing across the alluvium towards the Iranian plateau, who imposed it from without on the disparate regions of highland southwest Iran and its peoples," as expressed by Daniel Potts in his masterful account of the history and archaeology of this region of Iran (Potts 2016: 1; Zadok 2018a). Moreover, the Mesopotamian designation "Elam" referred to differing extents of Iran through time, ranging from Khuzestan and the entire Iranian uplands in the third-second millennia BC to the restricted region of Susiana by the first millennium BC, rendering it especially difficult to localise names of towns and rivers attested in Mesopotamian and Elamite texts (Vallat 1993; Desset 2017; Rashidian 2019). An early convincing naming of Elam comes from Sumerian cuneiform texts of the Early Dynastic III period, *c.* 2550 BC, where the sign NIM, meaning "high" or "elevated," almost certainly refers to Elam (Zadok 1994: 37–38; Álvarez-Mon 2012: 740, 2016; Álvarez-Mon *et al.* 2018b: 1; Schrakamp in press). Earlier occurrences of NIM in texts of Late Uruk and Jemdet Nasr date, including lists of female slaves from NIM.KI (KI signifying "land" or "place") do not definitely refer to Elam (Potts 2016: 80; Desset 2017: 3–4). But it is not until the early second millennium BC that an Elamite individual, Siwe-palar-huhpak, uses an indigenous term for Elam, "Hatamti" (Desset 2017:

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7), and even then, it is unlikely that the peoples and societies living in south-western Iran at that time regarded themselves as belonging to a distinct unified region.

In keeping with the recurrent lack of an indigenous sense of unified political identity, the geographical borders of Elam were fluid through time but in broad terms we can trace the maximum extent of Elam on a map (Figure 10.1) as reaching from the central Zagros in the northwest to the eastern border of Fars in the southeast, with the low-lying region of Khuzestan as a key zone of intercultural interaction always at the heart of Elam (Petrie *et al.* 2018). As Javier Álvarez-Mon (2012: 740; see also Álvarez-Mon 2020: xxxiii–xxxv) eloquently sets out regarding the significance of its geography:

> The appearance of Elam as a political and cultural notion is deeply entrenched in the unique lowland-highland physical setting provided by the Iranian provinces of Khuzestan and Fars. This setting was responsible for conditioning the material wealth, cultural resiliency and longevity characterizing Elamite civilization. It also determined the political history of Elam as an empire by providing a buffer or retreat zone that allowed for the periodic mustering of expansionistic ambitions upon neighboring political entities.

Khuzestan and the early Elamite state

Khuzestan in south-western Iran (Figure 10.1) was of unique significance in the dynamics of Iran-Mesopotamia relations, situated directly between the fertile riverine plains and marshes of Lower Mesopotamia and the uplands of the Iranian plateau with their rich human, animal, mineral and material resources. Throughout prehistory and early history, as explored in earlier chapters, the Khuzestan plains were connected to the Mesopotamian lowlands by accessible water and land routes, while at the same time providing direct access to and from the upland zone to the east. The Khuzestan plains (Figure 10.2) were highly fertile, capable of supporting large-scale, urban settlements based on intensive agriculture and animal management. In particular, the plains of Mehran, Deh Luran, Izeh, Susiana and Ram Hormuz are all of major significance in examining the shifting relationships between the Bronze Age polities of Iran and Mesopotamia (Álvarez-Mon 2012, 2013a). Once more, Susa provides the most

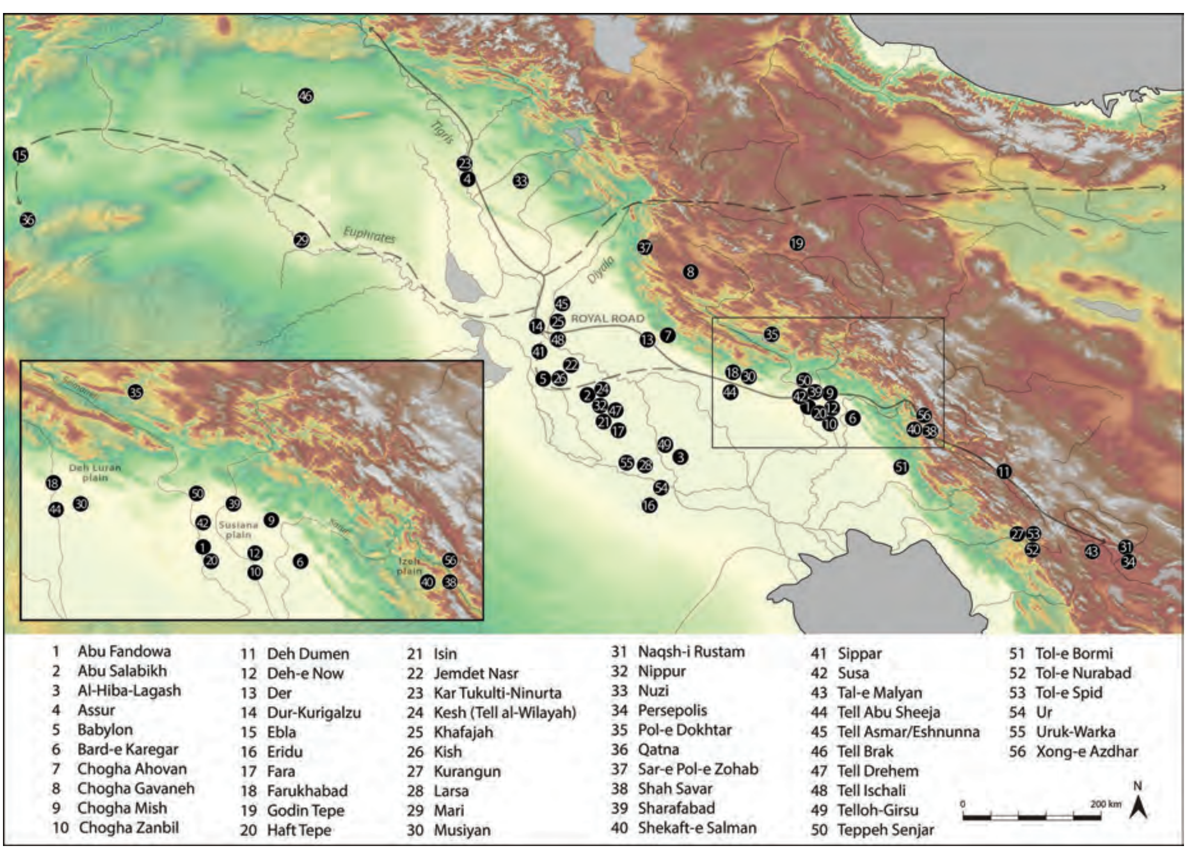

Figure 10.1 Map of western Iran and Mesopotamia, with key sites.

Figure 10.2 View of Zohreh plain, Khuzestan, in region of Tol-e Chega Sofla (photo credit: Abbas Moghaddam).

informative archaeological evidence while the historical evidence, particularly from the later centuries of this period, originates from a range of locales both within and beyond Elam, but from Mesopotamia above all. Let us establish the chronological framework before examining the evidence in detail.

Susa in the third millennium BC: chronology of Susa IIIB-C, Susa IV and Susa V

Following the collapse of the Proto-Elamite "state" at *c.* 2900–2800 BC (Chapter 7), Susa's material culture was increasingly impacted by Sumerian and then Akkadian influences from Lower Mesopotamia (Figure 10.3; Table 10.1) (Steve *et al.* 2002; Desset 2012). The Susa IV (also known as Susa D) period is preceded by a phase of transition from the Proto-Elamite period, Susa IIIA, as represented by material from Acropole I levels 16-14B, and the start of Susa IV in Acropole I level 12 and Ville Royale I level 12 (Voigt and Dyson 1992: 134). These intermediate levels, Susa IIIB (Acropole I levels 14A-13, Ville Royal I 18-16) and Susa IIIC (Acropole I level 13, Ville Royale I 15-13), contain ceramics and cylinder seal impressions with good parallels in assemblages from Lower Mesopotamian sites of Early Dynastic I–II date, including Nippur and Tell Asmar (Carter 1978, 1980; Carter *et al.* 1992a; Voigt and Dyson 1992: 133), suggesting a significant period of engagement between Khuzestan and Lower Mesopotamia, including the Diyala region, in the early third millennium BC, immediately following or even contemporary with the collapse of the Proto-Elamite horizon.

The Susa IV period is conventionally divided into two major phases (Steve and Gasche 1971; Carter 1978, 1980; Voigt and Dyson 1992: 134). Susa IVA equates to Early Dynastic III in Lower Mesopotamia, although the ceramic parallels at Susa are more with Zagros sites such as Godin Tepe III:6 than with Lower Mesopotamian sites, as well as showing connections to Luristan, the Hamrin, the Diyala and the Deh Luran regions (Carter *et al.* 1992a; Henrickson 2011b; Del Bravo 2014; Potts 2016: 85–86). The "Early Group" of soft-stone vessels in intricate style found at Susa and at sites in Mesopotamia appear to date to this phase and indicate Susa's key role within a thriving trade network connecting Lower Mesopotamia, Susa, the Persian Gulf and south-eastern Iran in the mid-third millennium BC (de Miroschedji 1973; Kohl 1975; Amiet 1979a; Casanova 2019). Contemporary with the Early Dynastic III and Akkadian periods of Mesopotamia (Voigt and Dyson 1992: 134, Figure 2), Susa IVB sees the conquest of Susa and Elam by the Akkadian king Sargon and a major increase in Mesopotamian influence in ceramics, including conical bowls and "goddess handle" vessels (Carter 1978, 1980), in the introduction of the Mesopotamian cuneiform script at Susa (Voigt and Dyson 1992: 134; Desset 2012: 132) and in the use of cylinder seals with strong Mesopotamian iconographic connections (Ascalone 2018: 628–629).

In the following Susa V period, the Susa VA phase represents a short episode of Elamite independence sandwiched between political domination by the Mesopotamian powers of Akkad and the Ur III empire. During Susa VA, the Elamite king Puzur-Inshushinak promoted a linear script for the local Elamite language (Dahl 2013: 257–259; Desset 2018b). Susa VB is the time of domination by the Ur III state, attested by construction of the Ninhursag Temple on the Acropole and by seals and serpentine vessels decorated with concentric circles, which are widely distributed across Mesopotamia, Iran, the Persian Gulf and into Central Asia at the end of the third millennium BC (Voigt and Dyson 1992: 135).

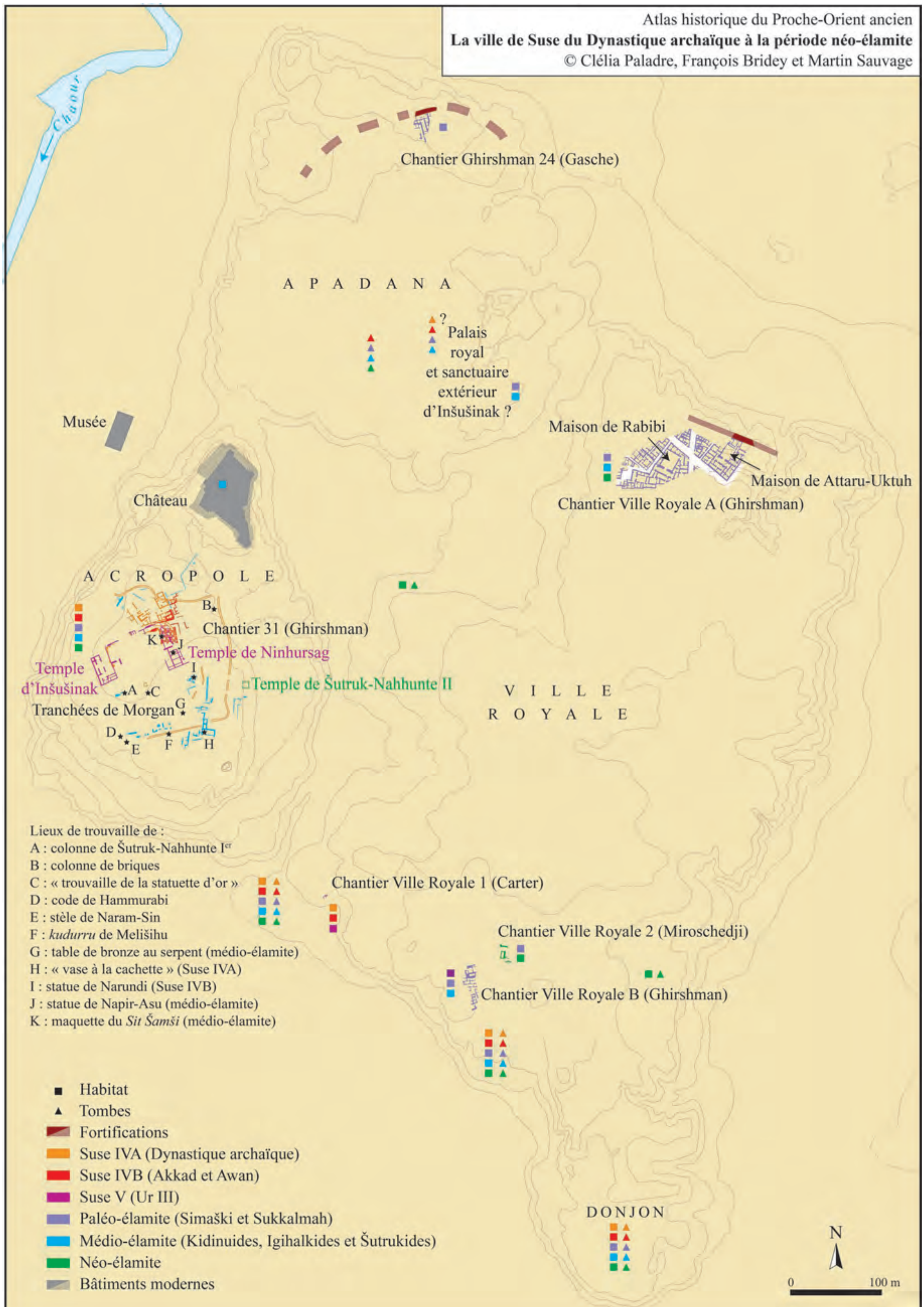

Figure 10.3 Plan of Susa to show excavated remains from Susa IVA to Neo-Elamite (Sauvage 2020: 105) (image courtesy of Clélia Paladre, François Bridey and Martin Sauvage).

Table 10.1 Comparative chronology of Iran and Mesopotamia, 3100–1900 BC (after Sardari and Attapour 2019: Table 1)

Date BC	*Historical periods*	*Susa sequence*	*Susa stratigraphy*			*Mesopotamia*
			Acropole I	*Ville Royale I*	*Steve & Gasche*	
1900				3		Old Babylonian
		Susa V B				
2000	Old Elamite			4A		Isin/Larsa
	(Shimashki)			4B		
				5		Ur III
2100				6A		
		Susa V A		6B		
2200				7	Couche I	
					(Neo Akkadian)	
2300						
		Susa IV B		8	Couche 2	
2400	Old Elamite				(Neo Akkadian)	Akkadian
	(Awan)			9A		
				9B	Couche 3	
				10	(Proto-Imperial)	
2500				11		
				12	Couche 4:	
2600	Early dynastic?	Susa IV A			Strata 4a	Early Dynastic III
			10?	13	Strata 4b	
				14		
2700		Susa III C	11?	15		
			12?	16		
			13	17		Early Dynastic II
2800		Susa III B	14A	18		
			14B		Proto-Dynastic	
2900			15A			
			15B			Early Dynastic I
3000			16A			
			16B			
3100	Proto-Elamite	Susa III A	16C			Jemdet Nasr

The emergence of Elam and Awan, 2800–2350 BC

Following the transitional Susa IIIB-IIIC phases, the Acropole continued to serve as the religious focus of **Susa** during Susa IVA. To the north of the High Terrace on the Acropole mound, multi-room mudbrick complexes with large storage vessels and grain stores, dated to *c.* 2600–2450 BC, were constructed (Figures 10.3–10.4) (Steve and Gasche 1971: 107–111, Figure 8; Álvarez-Mon 2020: 81–83). The existence of a temple is attested by votive limestone wall plaques of Early Dynastic style, comparable to Mesopotamian examples (Figure 10.5) (Pelzel 1977; Potts 2010a; Álvarez-Mon 2020: 83–86, pl. 34), including one with an early depiction of a seated musician playing an arched harp, a common Mesopotamian and Susan elite musical motif through the third and second millennia BC (Lawergren 2018: 782–789). Pottery from Susa IVA includes vessels decorated with wavy lines, appliqué strips and painted motifs including animals and fish, with parallels at many central Zagros sites including Godin III:6 (Figure 10.6) (Potts 1999: 96; Henrickson 2011a; Álvarez-Mon 2020: 92–100, pls. 37–39). Mesopotamian ceramic types include mass-produced vessels such as conical cups and conical bowls (Voigt and Dyson 1992: 134), suggesting that modes of production and consumption of ceramics at Susa had been significantly impacted by Mesopotamian custom and practice. Cylinder seals and clay sealings with seal impressions characteristic of Early Dynastic I-III Mesopotamian types further attest

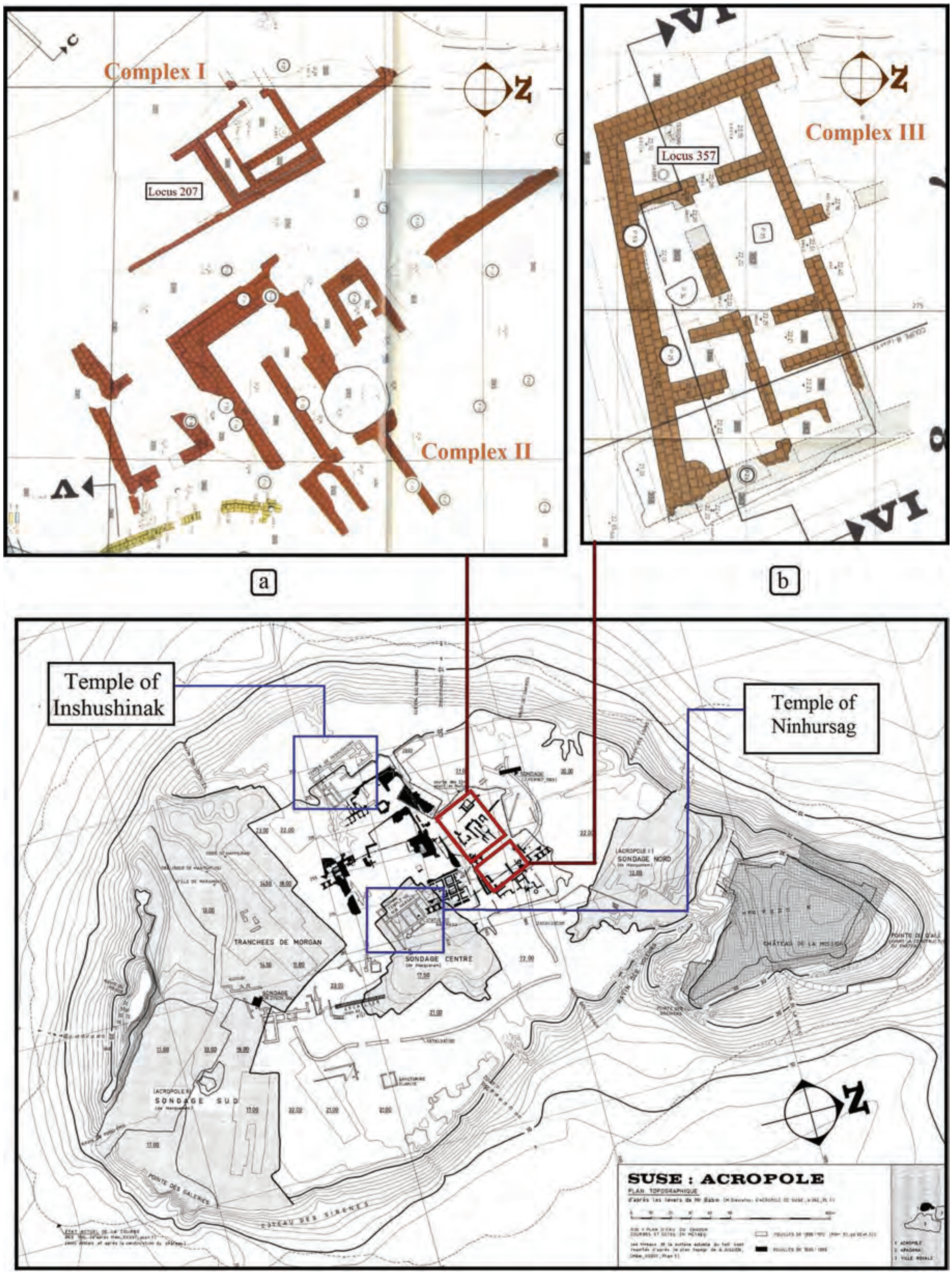

Figure 10.4 Susa IVA, architectural complexes on the Acropole, *c.* 2600–2450 BC (Álvarez-Mon 2020: pl. 32) (image courtesy of Javier Álvarez-Mon).

Figure 10.5 Susa IVA, votive limestone wall plaques (Álvarez-Mon 2020: pl. 34) (image courtesy of Javier Álvarez-Mon).

this trend (Figure 10.7) (Potts 2016: 89; Álvarez-Mon 2020: 102–109, pls. 42–44). Especially characteristic of Susa's material culture through the third millennium BC and beyond are bitumen vessels and other artefacts, including stands adorned with depictions of human and animal processions (Figure 10.8). These objects were made from a bituminous compound, sourced from Pol-e Dokhtar in Luristan (Connan and Deschesne 1996; Deschesne 2003), mixed with ground calcite and quartz, heated, hardened and carved often in highly elaborate forms (Carter *et al.* 1992a: 99–105; Álvarez-Mon 2018b: 605, 2020: 86–87, pl. 35; Basello and Ascalone 2018: 708–711).

Roland de Mecquenem's excavations at Susa, in particular, uncovered large quantities of burials in the Ville Royale I and Donjon areas of the site, including burials of chariots with wooden wheels and nailed copper tires. Sophisticated metallurgical skills are further attested by metal vessels, tools and weapons, including the first appearance of tin-bronze objects alongside the traditional use of arsenical bronzes (Figure 10.9) (de Mecquenem 1943: 123; Amiet 1966: 143; Tallon 1987: 297–307; Helwing 2018: 126–128; Álvarez-Mon 2020: 110–116, pls. 46–47). Wall plaques of alabaster and bitumen compound with banquet and human-animal contest scenes similar to those of Early Dynastic Sumer, but carved in a local Susa style, were found in the temple of Ninhursag at Susa (Figure 10.10) (Carter *et al.* 1992a: 84–85; Álvarez-Mon 2018b). A striking find made by Morgan at Susa in 1907 was the Vase à la Cachette, two large painted jars, with lids, containing artefacts with a date range of *c.* 2900–2400 BC, likely the hoard of a well-to-do Elamite merchant buried at some time around 2400–2300 BC (Figure 10.11) (Pittman 2002). Objects included many alabaster, copper and bronze vessels, tools, weapons, and six cylinder seals mainly in Early Dynastic IIIA Mesopotamian style, though locally executed (Carter *et al.* 1992a: 108–110; Álvarez-Mon 2020: 100–102, 104, 110–117, pls. 41, 46–48). But one seal from the cache has a depiction of a humped zebu in classic Harappan pose and other items - vessels and tools made of Omani copper, bronze objects including Afghan tin - indicate strong trade and exchange networks reaching to and from the east. At this time, we can also identify an especially wide distribution across the Persian Gulf, the Indus Valley, Mesopotamia and Syria of carved chlorite vessels in the so-called Intercultural or Halil Rud/Jiroft Style arriving from eastern Iran (Kohl 1975; Kohl *et al.* 1979; Álvarez-Mon 2020: 119; see Chapter 9). In sum, the material evidence from Susa in the early-mid third millennium BC betokens "a vibrant and creative period that saw the elite of Susa actively showcasing wealth and

Figure 10.6 Susa IVA, painted ceramics (Álvarez-Mon 2020: pl. 38) (image courtesy of Javier Álvarez-Mon).

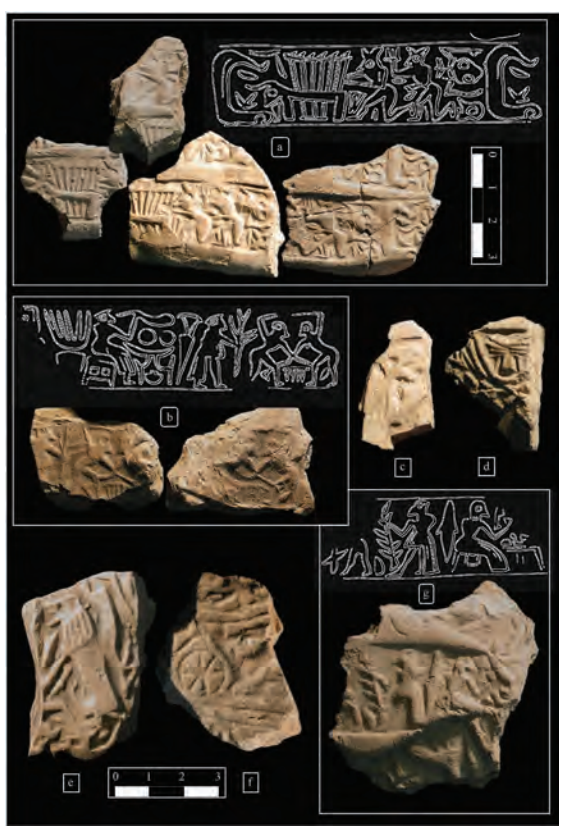

Figure 10.7 Susa IVA, clay sealings with cylinder seal impressions (Álvarez-Mon 2020: pl. 42) (image courtesy of Javier Álvarez-Mon).

Figure 10.8 Susa IVA, objects made of carved bitumen compound (Álvarez-Mon 2020: pl. 35) (image courtesy of Javier Álvarez-Mon).

military paraphernalia and articulating new paradigms associated with the metaphysical world, leading to the establishment of canons in religious, elite, and royal art" in the astute phrases of Álvarez-Mon (2020: 79).

Earlier possible renderings of the name of Elam as NIM and NIM.KI on proto-cuneiform texts of *c.* 3000 BC from Uruk and Jemdet Nasr and on Early Dynastic I and III texts from Ur, Fara and Abu Salabikh notwithstanding (Potts 1999: 87), the state of Elam receives an early mention in Mesopotamian cuneiform texts in the Sumerian King List, where "the king of Kish (En)Mebaragesi carried away the spoil of the weapons of the land of Elam and kingship went from Kish to Uruk, from Uruk to Ur, from Ur to Awan, and from Awan back to Kish" (Jacobsen 1939: 83–97; Marchesi 2010). Dating of Enmebaragesi to *c.* 2675 BC (Edzard 1967: 54) is supported by fragments of alabaster vessels inscribed with his name, found at Khafajah in the Diyala region northeast of Baghdad (Steible 1982: 213). This and other Elamite connections with Early Dynastic sites in the Diyala region suggest that the main route of communication, friendly or otherwise, between northern Babylonia where Kish is situated and Elam was via what became known to Herodotus as the "Royal Road" (Figure 10.1), leading from Babylonia up the lower Diyala to Der (Tell 'Aqar near Badra) and then down the trans-Tigridian corridor into northern Khuzestan and on to Susa, a route already defined in Early Dynastic III texts from Abu Salabikh in Lower Mesopotamia and Ebla in northern Syria (Frayne 1992: 58–59; Potts 2016: 81). This route is also likely to have underpinned the networks of transregional socio-cultural engagement marked by the "city seal" evidence from Jemdet Nasr, Ur and Konar Sandal South, in which the city of Der appears to feature significantly at *c.* 3000–2750 BC (Matthews 1993; Matthews and Richardson 2018, 2020).

Early Dynastic III texts from Girsu-Lagash list the import of equids, resin, spices and slaves into Lower Mesopotamia from Der (Zadok 1994: 38; Selz 1991, 2014: Table 2), commodities that would have reached Der from the highland zones of Iran to which it had ready access via Susiana. Much of this extensive trade between Sumer and Elam was also conducted via sea and riverine routes using the seaport and ship-building centre of Gu'abba on the coast of the Persian Gulf and closely connected by canal to Girsu-Lagash. Exports from the Girsu-Lagash region to Elam included barley, textiles, tin-bronze, pig fat, flour and silver (Laursen and Steinkeller 2017; Steinkeller 2018). Other texts from Girsu-Lagash record severe military conflicts between the city-state of Lagash and

Figure 10.9 Susa IVA, metal objects (Álvarez-Mon 2020: pl. 46) (image courtesy of Javier Álvarez-Mon).

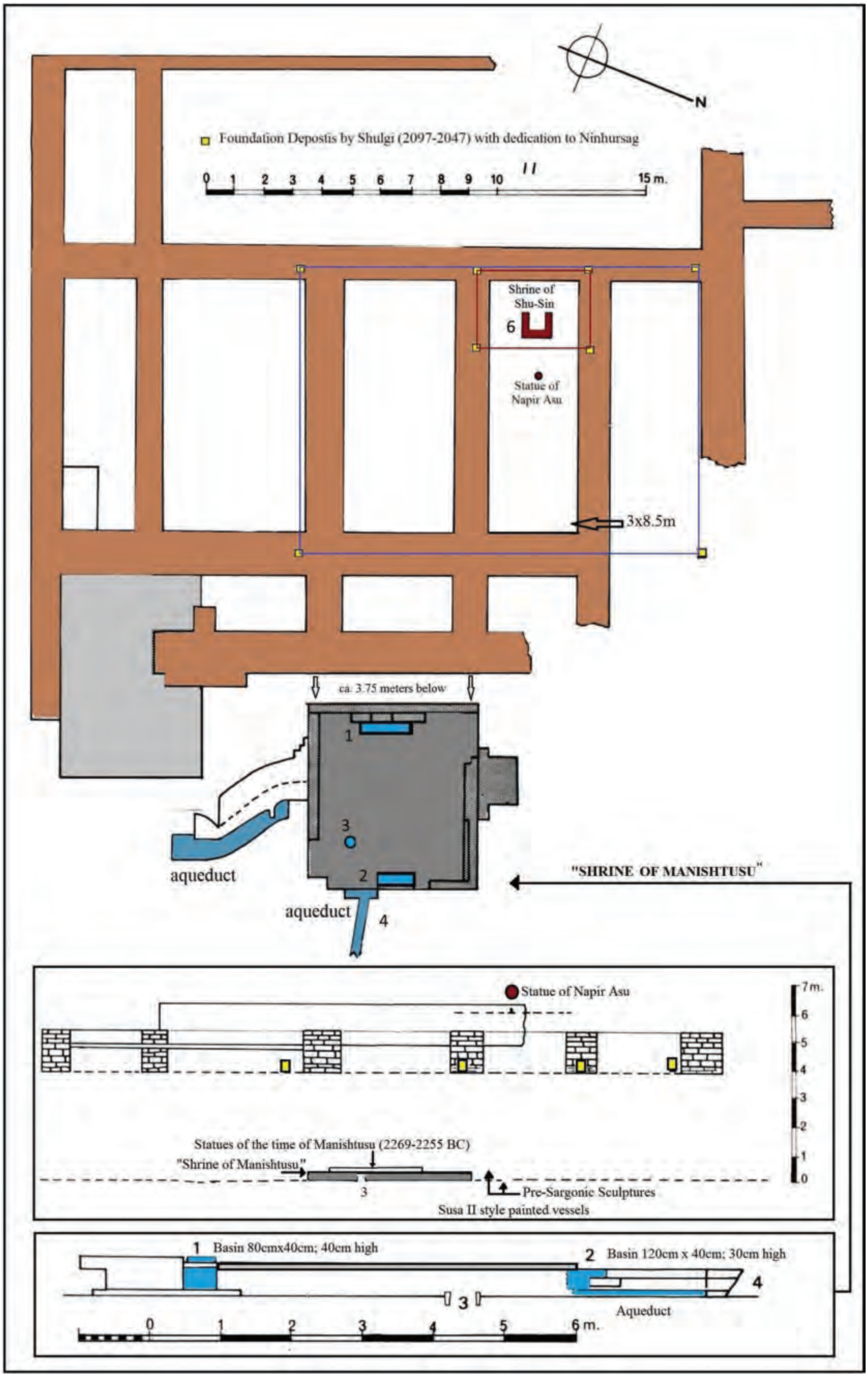

Figure 10.10 Susa, temple of Ninhursag (Álvarez-Mon 2020: pl. 33) (image courtesy of Javier Álvarez-Mon).

Figure 10.11 Susa IVA, Vase à la Cachette vessels and contents (Álvarez-Mon 2020: pl. 41) (image courtesy of Javier Álvarez-Mon).

a coalition of Akshak, Kish, Mari, Elam, Shubur and Arawa at *c.* 2400 BC (Frayne 2008a: 126–158; Steinkeller 2018: 180–181). Textual evidence for gift exchanges amongst the dynastic households of this era records considerable movement of unfree humans, i.e. slaves, of all ages and gender between male-dominated elite groups in cities across Lower Mesopotamia and eastwards into south-western Iran (Bartash 2020).

The location of Awan remains uncertain but, as one-time host of Sumerian kingship, it was clearly a site or region of major significance in the Sumerian dynastic tradition. Later Elamite kings traced their origins to Awan, which suggests a highland location – and Potts (1999: 92) has proposed the Kangavar valley and the site of Godin Tepe as possibilities for ancient Awan – but its mention alongside heartland Sumerian cities such as Kish, Uruk and Ur might suggest a location closer to the Lower Mesopotamian plains (Álvarez-Mon 2012: 744), or the term "Awan" may be a local toponym congruent with the exonym "Elam" (Steinkeller 2018: 179). On the Mehran plain in Ilam the large site of **Chogha Ahowan** is a major settlement of the late fourth and early third millennia BC (Nokandeh 2010a), a plausible candidate for ancient Awan or the major site of Awan, while Michalowski (2008) suggests a location east of Susa in the southern Zagros. Further southeast, in the Kohgiluyeh/Boyer-Ahmad region of south-western Iran, excavations at the cemetery site of **Deh Dumen** have recovered a rich assemblage of tin-bronze objects and ceramics comparable to materials from Susa IV and sites in Luristan such as Bani Surmah (Figures 8.42–8.43) (Chapter 8; Oudbashi *et al.* 2016).

Akkadian and Ur III imperial engagement with Elam and Iran, c. 2350–2000 BC

Mesopotamian connectivity of Susa and Elam in the earlier-mid third millennium BC culminated in the conquest of Elam by the Akkadian king Sargon at *c.* 2300 BC, marking the start of the Susa IVB phase at Susa, and the first occasion on which south-western Iran was incontrovertibly incorporated fully into the Mesopotamian political sphere (T. Potts 1994: 97–121; Potts 2016: 91–112; Foster 2016; Steinkeller 2018: 183–190; Álvarez-Mon 2020: 130–141). From this time until the collapse of the Ur III state at 2004 BC, except for the brief interlude of Puzur-Inshushinak, Susa and Elam were ruled by a succession of Mesopotamian kings, and Elam became a participant in a transregional world of conflict, treaty and inter-dynastic marriage alliance.

Elam in the Akkadian empire, c. 2350–2100 BC

The critical importance of this region to the early Akkadian kings is underlined by the fact that three of the four surviving year names of Sargon commemorate his victories in the east (Sallaberger and Westenholz 1999). According to royal inscriptions of Sargon and Rimush, regions of Iran well to the east of Susa were conquered, at least temporarily by them or their allies, including Barahshum which equates with Marhashi which most scholars agree as including the Halil Rud region of eastern Kerman including Tepe Yahya and Jiroft (Potts 2004a; 2016: 93–94; Steinkeller 2006; see Chapter 9). A typical boast by Rimush paints a grim scene of battle and slaughter followed by appropriation and enslavement:

> Rimush defeated Abalgamash, king of Barahshum, in battle; Zahara and Elam arrayed themselves for battle in the midst of Barahshum, but Rimush was victorious; 16,212 men were killed and another 4,216 taken prisoner; Emahsini, king of Elam, was captured…from Elam was captured, and Shar-GA-PI from Zahara was captured between Awan and Susa by the river Qablitum; mounds of corpses were heaped up in the city and he conquered the cities of Elam and razed their walls and he tore the roots of Barahshum out of the land of Elam, for Rimush, king of the totality, rules now Elam……After conquering Elam and Barahshum he removed 30 minas of gold, 3600 minas of copper and 360 male and female slaves and dedicated them to Enlil.
> (Potts 2016: 95)

The Akkadian king Naram-Sin, 2254–2218 BC, campaigned extensively against the peoples living in the mountainous regions fringing eastern Mesopotamia, including the Lullubi of the north-central Zagros (Altaweel *et al.* 2012; Balatti 2017; Renette 2018: 100–102), as most famously depicted in the Naram-Sin stele, which originally stood in the Babylonian city of Sippar before its later removal to Susa by Shutruk-Nahhunte in 1158 BC (Figure 10.12) (Winter 1999; Bahrani 2017: 123–125; see below). Naram-Sin also campaigned against Elam and Barahshum, this last campaign taking place after the deification of Naram-Sin as indicated by use of the divine determinative, **dingir**, before his name in the relevant inscription (Potts 2016: 97). Additionally, Naram-Sin is the only Akkadian king for whom we have evidence of building commissions in Elam, namely two inscribed brick fragments from Susa, which may originally have marked the construction of a building comparable in scale to the so-called Naram-Sin Palace at Tell Brak in Upper Mesopotamia (McMahon 2020). Towards the end of the Akkadian domination of the east, indication of a new policy of inter-dynastic alliance is provided by the

Figure 10.12 Stele of the Akkadian king Naram-Sin, *ca.* 2254–2218 BC (SB4; photo credit: © RMN-Grand Palais, Musée du Louvre/Franck Raux).

marriage of either the Akkadian king Sharkalisharri or his son to a princess of Marhashi, which appears to have taken place in Marhashi.

Key to understanding Akkadian rule of Susa and Elam is an Old Elamite text found at Susa that records an agreement between Naram-Sin and an Elamite king of unknown name (Hinz 1967; Álvarez-Mon 2012: 745, 2013a), with the classic formulation that "the enemy of Naram-Sin is my enemy; the friend of Naram-Sin is my friend." The text starts with an invocation of more than 30 deities, of whom at least 26 are Elamite (Potts 2016: 101). The Akkadian conquest of Elam was followed by a resurgence of writing at Susa, as a means of elite control and administration (Desset 2017: 12–13), for the first time in half a millennium since the collapse of the Proto-Elamite world at *c.* 2900/2800 BC, along with the adoption at Susa of silver as the main currency medium (Helwing 2018: 126). A few poorly provenanced texts from Susa may suggest a modest degree of early-mid third millennium BC literacy, prior to Akkadian rule (Desset 2017). The increasing "Akkadianization" of Susa society in the later third millennium BC, at least in its upper strata, is attested by some 85 Old Akkadian administrative and legal documents from Susa, plus inscribed statues, bronze axes, stone mace-heads and brick fragments from building activity by Naram-Sin (Scheil and Legrain 1913; De Graef 2013; Basello and Giovinazzo 2018). But the extent to which the material culture of Susa and Elam at this time can be connected to direct Akkadian imperial control is doubtful, as summarised by Augusta McMahon (2012: 662): "Akkadianizing material culture in Elam provides a classic example of connection and emulation between elites within a wider region that was already tightly culturally integrated."

Archaeological evidence for the Akkadian presence at **Susa** comprises a possible granary and domestic buildings on the Acropole and in Ville Royale I (Steve and Gasche 1971: 77; Carter 1980). Fragments of inscribed stelae found at Susa, made of olivine-gabbro (previously thought to be of diorite) from southern Iran or Oman, depict Sargon and his troops capturing and dispatching defeated enemies (Figure 10.13), while a headless statue of Manishtushu from Susa (Figure 10.14) bears an inscription of the later Elamite king Shutruk-Nahhunte (*c.* 1190–1155 BC) informing us that this statue along with much else had been taken to Susa from the Akkadian capital city of Agade (Amiet 1976a; Nigro 1998a; 1998b; Hansen 2003; Bahrani 2017: 114–125), as yet not located on the ground.

While ceramics and metalwork show many Mesopotamian connections (Helwing and Neumann 2014; Helwing 2018: 126), there are ongoing highland parallels in the material culture, including painted clay figurines similar to examples from Tal-i Malyan to the east (Potts 2016: 102–111). Cylinder seals from levels of this date at Susa show direct Akkadian Mesopotamian influence (Figure 10.15) (Amiet 2005; Ascalone 2018; Álvarez-Mon 2020: 131–136), as well as contacts with the Jiroft region (Ascalone 2019). The presence of a cylinder seal with Harappan characters and iconography along with incised shell bangles and etched carnelian beads all show connections with the Indus Valley. Other objects, including many *série récente* soft-stone bowls with dotted circle adornment and square-based flasks attest contacts with Oman and Central Asia respectively (de Miroschedji 1973; Potts 2016: 112). The evidence of manifold stone weights made from a range of materials including haematite, limestone and bitumen, and showing morphological parallels eastwards to the Indus Valley as well as westwards to Mesopotamia and Anatolia, underline the significance of Susa as a vital hub of transregional engagement in the late third and early second millennia BC (Ascalone and Peyronel 1999; Ascalone 2019). As mentioned in Chapter 8, sherds of Godin III:5 type, Early Dynastic IIIb in date, occur in small numbers at the Lower Mesopotamian sites of Al-Hiba-Lagash, Telloh-Girsu and Ur (Henrickson 1987, 2011a; Renette 2018).

Figure 10.13 Susa, fragment of stele of Sargon, *ca.* 2300 BC (SB1; photo credit: © RMN-Grand Palais, Musée du Louvre/Hervé Lewandowski).

Figure 10.14 Susa, statue of Manishtushu, 2269–2255 BC (SB47; photo credit: © RMN-Grand Palais, Musée du Louvre/ Mathieu Rabeau)

Figure 10.15 Susa IVB, cylinder seals and seal impressions (Álvarez-Mon 2020: pl. 50) (image courtesy of Javier Álvarez-Mon).

Looking westwards, Susa played a vital role as a transhipment point for the movement of animals, commodities, slaves and troops along the great trans-Tigridian route, trending southeast-northwest and connecting Susiana with central and eastern Mesopotamia and beyond. We should bear in mind that the course of the Tigris in *c.* 2500 BC lay far to the south of where it lies today (Benati 2018), allowing for a significantly wider land corridor between the Tigris and the Zagros foothills in the past than has been possible following the northwards avulsion of the main Tigris channel. Excavations at archaeological sites along the modern Iraq-Iran border are filling in some of the toponym gaps along the trans-Tigridian corridor. Thus, excavations at **Tell Abu Sheeja** have established its identity as ancient Pashime (Hussein *et al.* 2010), with a temple to the god Shuda, a site previously believed to be located significantly further to the east along the coast of the Persian Gulf. The Akkadian king Manishtushu installed a governor of Pashime named Ilshu-rabi (Potts 2016: 96) who is depicted on an inscribed stone stele found in the temple of Shuda at Tell Abu Sheeja/Pashime. A group of stone sculptures found by Roland de Mecquenem on the Acropolis at Susa includes one with an inscription in Akkadian naming an individual as Eshpum, "servant of Manishtushu, king of Kish" (Figure 10.16) (Álvarez-Mon 2020: 89–92, pl. 36). Holly Pittman (2018c: 590) points out that the depiction of Eshpum at Susa is remarkably similar to that of Ilshu-rabi on the Pashime stele, with distinctive haircut, beard and other features, leading her to propose that Elamite sculptors under the rule of the early Akkadian kings including Manishtushu, father of Naram-Sin, developed a distinctive court style for the depiction of local officials that did not challenge the royal style exclusive to the Akkadian kings themselves, doubtless a diplomatic move in the circumstances.

Also important in the chain of east-west communication is the Deh Luran plain, approximately midway between Der to the west and Susa to the southeast. Here, the site of **Tepe Musiyan** was at its largest, >15 ha, in the early third millennium BC, and has been proposed by Steinkeller (1982) as ancient Urua/Arawa, an Elamite city known from Early Dynastic and later sources (Carter and Stolper 1984: 212; Wright and Neely 2010). Early excavations here exposed a large building of uncertain Elamite date (Gautier and Lampre 1905), while more recent survey of the plain recovered an inscribed cylinder seal bearing an Amorite name from Musiyan and inscribed materials from nearby Tepe Garan (Zeynivand 2019). On the Mehran plain in Ilam, the large site of Chogha Ahowan is also a significant through the late fourth and early third millennia BC (Nokandeh 2010a), as mentioned above, and must surely feature in early Mesopotamian texts perhaps as a centre of ancient Awan. Above all, much of the Zagros chain would have served as a frontier zone between the state of Simurrum to the west, focused on the Shahrizor plain of eastern Iraq, and the highland kingdoms to the east through the third millennium BC and beyond (Frayne 2009–2011; Henrickson 2011b; Altaweel *et al.* 2012; Glatz and Casana 2016).

Local hero interlude: Puzur-Inshushinak, c. 2150–2000 BC

Following the collapse of the Akkadian regime, associated broadly and plausibly with an abrupt episode of climatic adversity involving transregional drought and major dust dispersal (Figure 10.17) (Sharifi *et al.* 2015; Carolin *et al.* 2019), and more specifically with invasion by the Gutian peoples of the Zagros, the reign of the last king of Awan, Puzur-Inshushinak, is conventionally taken as equating to the Susa VA phase at *c.* 2100 BC (André and Salvini 1989; T. Potts 1994: 122–123; Potts 1999: 122; Sallaberger and Schrakamp 2015: 122–125). New readings of Linear Elamite texts suggest that the king's name be read as Puzur-Sushinak rather than Puzur-Inshushinak (Desset pers. comm.). This remarkable person, arguably the first native individual to step from the shadows of

Figure 10.16 Susa IVB, statue of Eshpum with Akkadian inscription across back (Álvarez-Mon 2020: pl. 36a) (image courtesy of Javier Álvarez-Mon).

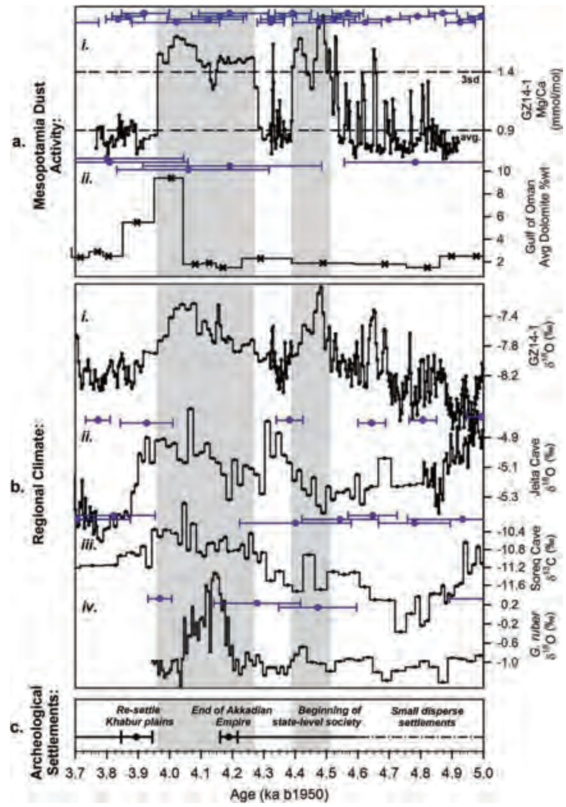

Figure 10.17 Environmental and climate change in Southwest Asia, *ca*. 3000–1700 BC (Carolin *et al*. 2019: Figure 4) (image courtesy of Stacy Carolin).

Iran's prehistory into the still dim and flickering light of its history, engaged in an expansionist policy whereby he brought Susa and Anshan into the kingdom of Awan, conquered a large number of Elamite and other Iranian towns and raided and dominated towns of northern Babylonia in order to exert control over the major routes of communication between Elam and Mesopotamia, once more with a focus on the trans-Tigridian route leading to the Diyala and Jebel Hamrin regions. The enduring significance for Iranian history of Puzur-Inshushinak's short reign has been well characterised by Piotr Steinkeller (2013: 303):

> In view of the huge geographical scale of Puzur-Inšušinak's conquests, it will not be unjustified to call his state an 'empire.' Although this empire was short-lived, its historical importance cannot be overstated, since the act of putting of much of the Iranian plateau under a single rule, and of incorporating the Susiana into Elam, was a watershed event of the early Elamite history.

During his brief sway, Puzur-Inshushinak undertook a programme of temple construction at **Susa**, attested by Akkadian and bilingual inscriptions on votive nails and cultic statues (Amiet 1966: 227; Steve and Gasche 1971: 61), including a fine limestone statue of the goddess Narundi (or possibly Inana: Desset pers. comm.) seated on a throne whose sides depict standing lions (Figure 10.18) (Álvarez-Mon 2020: 150, pl. 57). Amongst the attested building activities at Susa commissioned by Puzur-Inshushinak (Álvarez-Mon 2020: 143–146), the most significant include the construction or restoration on the Acropolis of a temple of Shugu, an obscure deity, the building of cellular-plan granaries in the centre of the Acropolis (Figure 10.19), and the dedication of a monumental staircase to the temple of Inshushinak inscribed in Akkadian and Linear Elamite (see below), with the Akkadian text typically invoking the wrath of Elamite and Babylonian deities on future defacers:

> To (his) Lord, Puzur-Inshushinak, mighty king of Awan, son of Shimibishuk. The year in which Inshushinak looked upon him and the four quarters of the world gave (him) to govern, a staircase he built. To the one defacing this inscription may Inshushinak, Shamash and Nergal uproot his foundations and remove his offspring. Oh my Lord! Provoke trouble in his spirit!.
>
> (Álvarez-Mon 2020: 159)

Figure 10.18 Susa VA, statue of the goddess Narundi (Álvarez-Mon 2020: pl. 57) (image courtesy of Javier Álvarez-Mon).

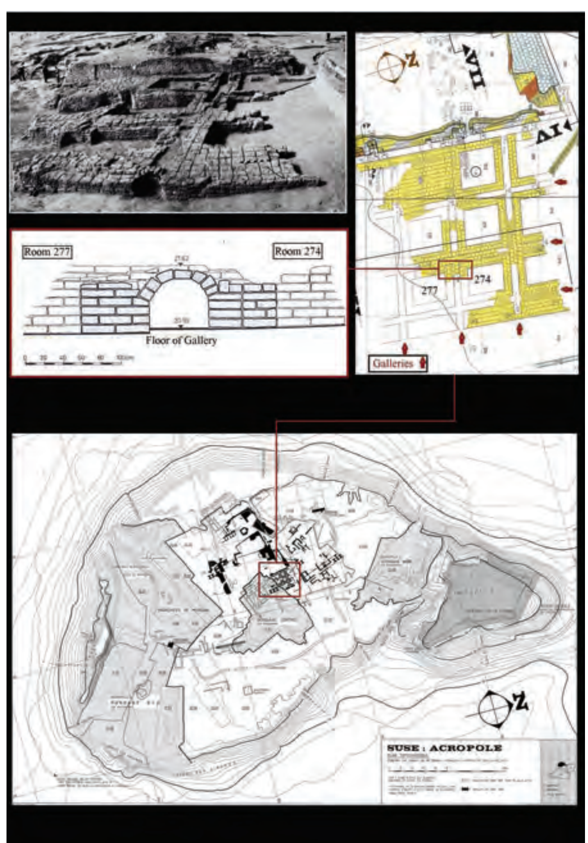

Figure 10.19 Susa VA, cellular granary structures (Álvarez-Mon 2020: pl. 54) (image courtesy of Javier Álvarez-Mon).

Figure 10.20 Linear Elamite inscriptions (Desset 2018a: Figure 6) (image courtesy of François Desset).

Puzur-Inshushinak also promoted the use of a script, so-called Linear Elamite, "a graphic expression of Elamite identity" (De Graef 2013: 268), which is presently known in only some 40 inscriptions with a total of 103 signs of which more than 40 occur only once (Figure 10.20) (Dahl 2009, 2013: 257–259; Salvini 2011; Desset 2012, 2018a; 2018b; De Graef 2013: 265–268; Potts 2016: 117–118; Glassner 2018: 455–457; Malbran-Labat 2018: 468). The majority of securely provenanced texts are from Susa (Carter *et al.* 1992a: 87–91), with examples also to the east at Shahdad and Konar Sandal South (Figure 10.21) (Chapter 9; Dahl 2013: 25; Desset 2014b; Pittman 2018c: 598). As three of the Susa texts occur in concert with Akkadian inscriptions it is likely that they provide abbreviated translations of those texts in a newly devised script relating to a local language (Potts 1999: Table 4.12; De Graef 2013: 265–266). It has been suggested that silver alloy vessels of so-called *gunagi* beaker form, several of which bear substantial Linear Elamite inscriptions, may have been used exclusively during funeral ceremonies (Figure 10.22) (Desset 2018a).

There is a fine Linear Elamite inscription cut into the upper neck of a spectacular silver vessel, reportedly found by workmen near Persepolis, which bears striking relief images of a standing and a seated female comparable in style and dress to portrayals of women on high-status objects excavated at Gonur-depe in the Murghab river delta region of Turkmenistan. Potts (2008) argues for an origin for this vessel within the context of the later third millennium BC Bactria-Margiana Archaeological Complex (BMAC) of Central Asia (Chapter 9), proposing that the inscribed vessel can best be understood within

> a period of contact and inter-cultural communication between Elam/Anšan and Bactria-Margiana that lasted from the lifetime of Ur-Namma and Puzur-Inšušinak – with whom the Persepolis vessel is linked by virtue of its Linear Elamite inscription – to the *sukkalmah* or Kaftari/Old Babylonian period,

i.e. a period of some 200 years around the turn of the third-second millennia BC. Related evidence of BMAC connections at Susa include bronze wheel rims and fittings, found in burials, comparable to examples from elite burials at Gonur-depe (Álvarez-Mon 2020: 170–172).

In any case, at least at Susa, Linear Elamite appeared and disappeared as briefly as king Puzur-Inshushinak himself and, following their demise, the Akkadian language in cuneiform script reasserted its role as the main medium of written expression at Susa (Stolper 1992c). There appears to be no linguistic connection between Linear Elamite and the earlier Proto-Elamite script (Chapter 7; Potts 2016: 118).

Figure 10.21 Map to show distribution of writing systems across Southwest Asia in the later third and early second millennia BC (Desset 2018a: Figure 1) (image courtesy of François Desset).

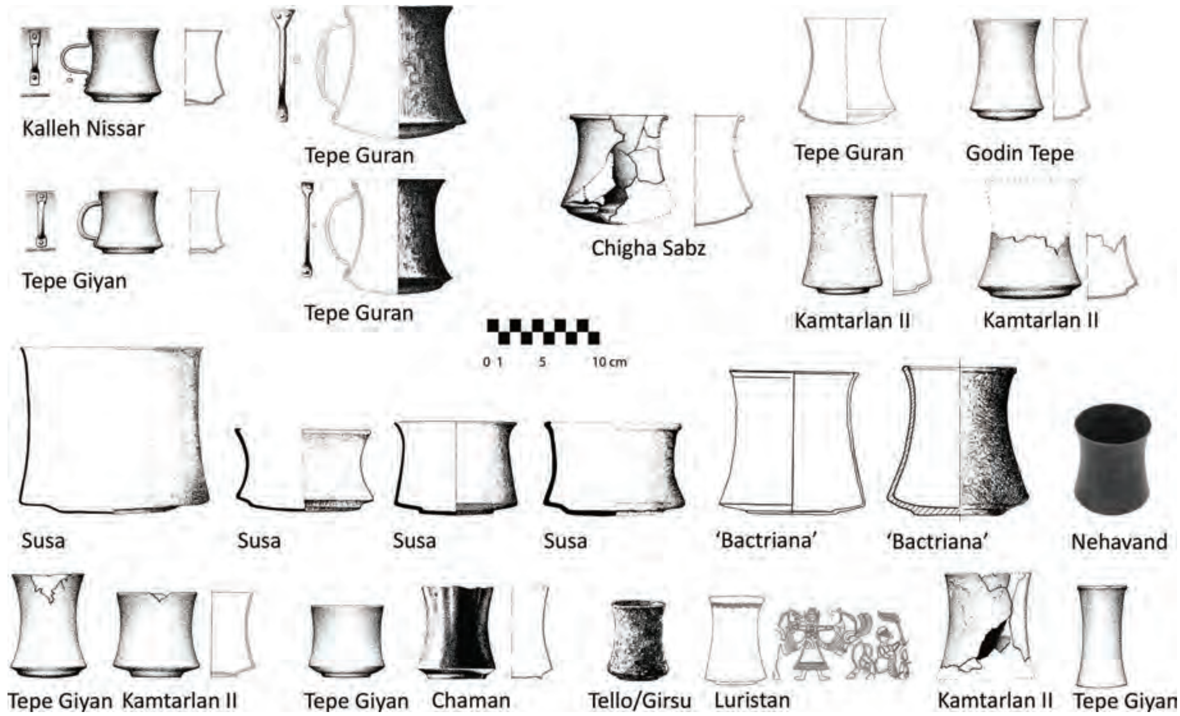

Figure 10.22 *Gunagi* vessels (Desset 2018a: Figure 15) (image courtesy of François Desset).

Elam in the Ur III empire, c. 2050–2000 BC

Following Puzur-Inshushinak's cometary rise and demise, Susa and Elam were once more brought under the direct control of a Mesopotamian polity, in this case the Third Dynasty of Ur or Ur III dynasty, in the Susa VB period (Steinkeller 1987, 2018: 193–196; T. Potts 1994: 124–140; Zadok 1994: 40–44; Michalowski 2008, 2013; Potts 2016: 123–132; Álvarez-Mon 2020: 163–179). Daniel Potts (2016: 146) summarises the Mesopotamia-Elam opposition of this period effectively: "the conflict between Elam and Ur in the last century of the third millennium emerges as a clash between two very different political forms: the hyper-centralized, unitary state *par excellence* of Ur, and the segmentary state of Elam," having characterised segmentary states as composing often multiple pyramids of power amongst which individual components may often shift allegiance, and with considerable degrees of cultural and ethnic internal variability bound together as a functioning whole by shared ritual belief and practice.

At **Susa**, the Sumerian rulers of the Ur III empire, commencing with Ur-Namma, left their mark in the form of multiple building projects across the entire site (Figure 10.3) (Malbran-Labat 1995; Steve *et al.* 2002) plus a group of about 50 Ur III texts mainly in Sumerian with a few in Old Akkadian (De Graef 2013: 268, 2015). Copper foundation nails with inscriptions of king Shulgi (2094–2047 BC) indicate his construction of temples on the Acropole to the local deity Inshushinak (Figure 10.23) and to the Mesopotamian deity Ninhursag (Tallon 1987: 308–310; Álvarez-Mon 2020: 164–166). Also built at this time was a large temple on the south-western flank of the Ville Royale, protected at its main entrance by three pairs of painted terracotta lions (Amiet 1966: 292–293). An unknown quantity of Ur III texts found at **Tal-i Malyan** (Sumner 2003; Desset 2012: 133–134; De Graef 2013: 269) suggest an ongoing importance for Anshan within the context of Ur III administration. In his year 18, Shulgi's daughter became queen of Marhashi, probably the Halil Rud region of south-eastern Iran (Potts 2004a; Steinkeller 2006), and others of his daughters were married to kings of Anshan and Pashime. Such inter-dynastic marriages were a key mechanism of interregional engagement by the powers of the day. Alternating with this policy was one of outright aggression in the form of military campaigns aimed at acquiring booty such as items of carnelian and lapis lazuli and metals such as gold, silver and copper (Potts 2016: 126). In particular, the Ur III kings like their Akkadian predecessors campaigned vigorously against the local kingdoms of the western and central Zagros regions, including Simurrum and Lullubum (Frayne 2008b; 2009–2011).

At around this time, building on the Akkadian tradition of monumental propagandistic art typified by the Naram-Sin stele, the practice of carving large-scale rock reliefs and stelae with depictions of powerful rulers

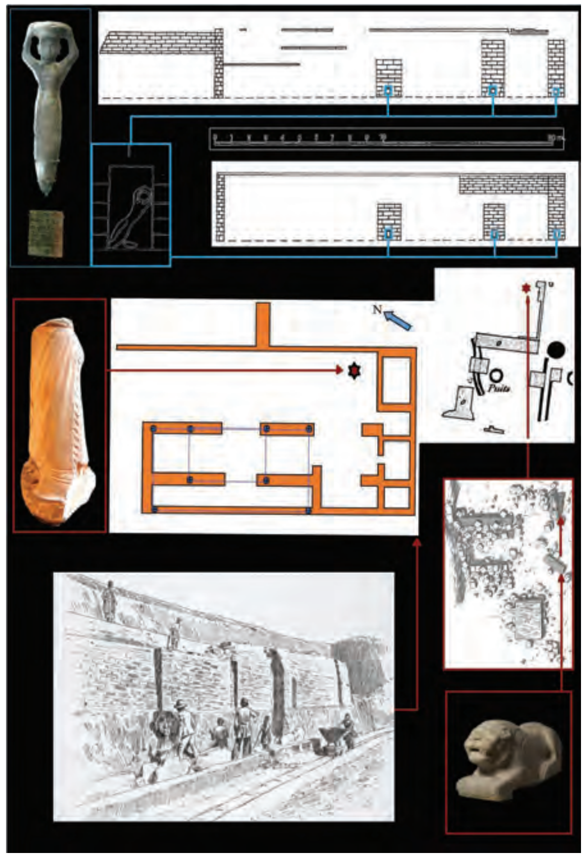

Figure 10.23 Susa VB, temple of Inshushinak at time of Shulgi, c. 2050 BC, and selected finds (Álvarez-Mon 2020: pl. 61) (image courtesy of Javier Álvarez-Mon).

sometimes accompanied by inscriptions in Akkadian is continued across the highland fringes of Mesopotamia, as attested by the four reliefs of Anubanini, king of the Lullubi, at **Sar-e Pol-e Zohab** along the Great Khorasan Road (De Graef 2013: 269) and at other sites northwards through the Zagros range (Postgate and Roaf 1997; Altaweel *et al.* 2012; Biglari *et al.* 2018; Mirghaderi and Alibaigi 2018; Alibaigi *et al.* 2020), clearly intended to stake ideological claims to the highly contested border zone between the ever-competing lowland and highland powers of the day. This frontier aspect is materialised in the form of rock reliefs and stelae defining the eastern bounds of Simurrum through the later third and earlier second millennia BC, as attested at Bamu, Bitwata, Haladiny/Qarachatan, Shaikhan and Sar-e Pol-e Zohab (Figures 10.24–10.25) (Biglari *et al.* 2018; Alibaigi *et al.* 2020).

Shulgi's son Amar-Sin (2046–2038 BC) made use of Girsu-Lagash in Lower Mesopotamia as the main entrepôt for trade with the east, a role Girsu had already assumed several centuries earlier in the Early Dynastic III period as discussed above. The governor of Girsu assumed the title "Grand Vizier or Regent," SUKKAL.MAH, a power title that came to have major significance for Elam in later centuries, as we shall see. Meanwhile, Akkadian appointees to the rule of Susa were entitled "governor of Susa" and "viceroy of the land of Elam." The wealth of Ur III administrative texts from Puzrish-Dagan (Tell Drehem) and other sites of Lower Mesopotamia reveal frequent visits to the Ur III heartland by dignitaries, ambassadors, hostages and prisoners from the Iranian east (Sigrist 1992; Zadok 1994; Potts 2016: 130).

Towards the end of Ur III control of Elam, the kings Shu-Sin (2037–2029 BC) and Ibbi-Sin (2028–2004 BC) sent military expeditions into the highlands in an attempt to maintain control of the Ur III state's territory, but their failure in this attempt is ultimately marked by the fall in 2004 BC of Ur and other Mesopotamian cities including Eridu, Kesh, Uruk and Nippur to a coalition of Elamites and people from the land of Shimashki (Stolper 1982; Potts 2016: 137). In a classic dirge, the Sumerian "Lamentation over the destruction of Sumer and Ur" relates how the cult statues of Ur's patron deity Nanna and other gods were carried off to Anshan, the king Ibbi-Sin himself was taken in fetters to Elam and the glorious city of Ur was left in ruins:

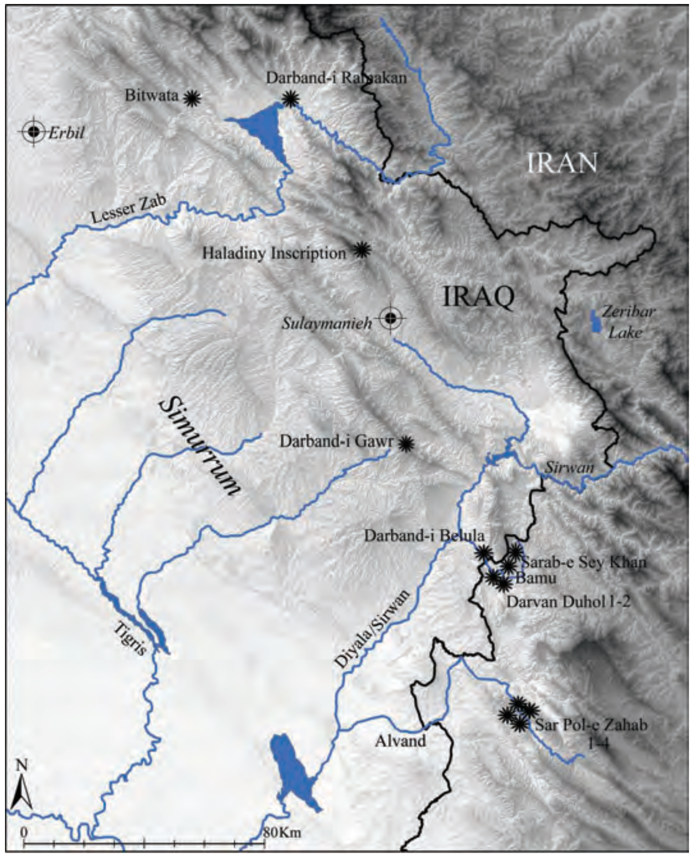

Figure 10.24 Map to show location of rock reliefs and stelae of late third and early second millennia BC date in western Iran and eastern Iraq (Alibaigi *et al.* 2020: Figure 2) (image courtesy of Sajjad Alibaigi).

> Elam, like a swelling flood wave, left only the spirits of the dead. In Ur people were smashed as if they were clay pots, its refugees were unable to flee, they were trapped inside the walls, like fish living in a pond.
> (Michalowski 1989: 61–63)

What led to this dramatic reversal in the fortunes of Ur and its imperial project? Our sources are not sufficiently rich to say, but there is palaeo-environmental evidence for a further pulse of drier climate and dust dispersal at this time (Sharifi *et al.* 2015: Figure 9). We may anyway agree with Michalowski's verdict that "the lands that had been subservient to Ur were instrumental in the final downfall of the kingdom. The Empire struck back" (Michalowski 1989: 2). The location of **Shimashki**, a poorly understood agglomeration of socio-political entities, partners with Elam in the overthrow of Ur III rule, is not certain but Potts (2008, 2016: 133; see also Stolper 1982; Vallat 1993 for alternative localisations of Shimashki) suggests that the Oxus civilisation or the Bactria-Margiana Archaeological Complex (BMAC) may have been the Shimashki homeland prior to their migration to south-western Iran. An Akkadian inscription on a statue of Puzur-Inshushinak found at Susa features an obeisant king of Shimashki in a list of over 70 places conquered by Puzur-Inshushinak, the earliest historical attestation of Shimashki. Potts (2008: 188) argues that Bactrian camels, finely depicted on a silver vessel comparable in style to the Persepolis vessel discussed above, may have been gifted by the rulers of Shimashki to the Ur III kings, and camels are also probably attested in Ur III tablets from Puzrish-Dagan where animals brought to Babylonia in huge quantities, including diplomatic gifts, were meticulously recorded (Steinkeller 2007, 2008).

A key point is that, for the first time in centuries, the power of Shimashki under its ruler Ebarat I succeeded in once more uniting upland Iran, or at least parts of it, with lowland Susiana in an integrated political entity, capable of contesting Mesopotamian claims to control over border territory and routes of access to cherished goods and commodities (Steinkeller 2014a; 2014b; 2018). Throughout the following decades, in the early twentieth century BC, we have much evidence for this contest, with outright warfare alternating with episodes of treaties and inter-dynastic marriages. King Ishbi-Erra of Isin (2017–1985 BC), a major city of Lower Mesopotamia, named his

Figure 10.25 Selected rock reliefs and stelae of late third and early second millennia BC date in western Iran and eastern Iraq (Alibaigi *et al.* 2020: Figure 14) (image courtesy of Sajjad Alibaigi).

12th, 13th and 23rd regnal years after victories over Elam, including the expulsion of an Elamite garrison from Ur, while also giving away a daughter, Libur-nirum, to an Elamite prince, Humban-shimti. Ishbi-Erra's successor, Shu-ilishu of Isin (1984–1975 BC), celebrated the return to Ur of the cult statue of Nanna, perhaps from Anshan, a hugely significant achievement given Nanna's status as prime deity of Ur. Further Mesopotamia-Susa engagement at this time is attested by an inter-dynastic marriage at *c.* 1980 BC between Me-Kubi, daughter of Bilalama, king of Eshnunna (Tell Asmar in the Diyala region) and Tan-ruhurater, governor of Susa. Me-Kubi sponsored the construction on the Acropole at Susa of a new temple to the most ancient Mesopotamian deity Inana (Steve *et al.* 2002: 439). Other kings of Isin and Larsa continued to engage in weddings and warfare with their Elamite neighbours to the east.

Archaeological and textual evidence from **Susa** congruent with the events and episodes curtly dealt with above are few and far between. In Ville Royale Chantier B, Ghirshman excavated a "Bâtiment aux Archives," the house of a scribe named Igibuni of late Ur III date (De Graef 2005, 2015). In this building, located on the southern edge of the Ville Royale, Ghirshman recovered 38 tablets from two of its rooms, dating from Shu-Sin year 4 to Ibbi-Sin year 1, *c.* 2034–2027 BC. The texts deal principally with loans of barley, administrative lists and household expenses, unusual insights into the conduct of everyday business within a well-to-do household situated politically and culturally within the wider context of a major empire. The evidence for destruction in this part of Susa, in the form of hundreds of Ur III-style projectile points (Gasche 1973: 12–13), may be attributed to the conquest of Susa either by the Shimashki king Ebarat I or subsequently by Ibbi-Sin early in his reign (De Graef 2015: 290), bringing to a violent end the quiet bureaucratic domesticity that we can imagine as prevailing in Igibuni's house till then. Significant occupation of this period is also attested at the site of **Tappeh Senjar**, only 18 km distant from Susa (Sardari and Attarpour 2019).

At Susa and Senjar there are cylinder seals in a distinctive style known as Anshanite that show strong connections with Tal-i Malyan and Central Asia (Figure 10.26) (Potts 2008, 2016: 143; Ascalone 2018: 636–638; Sardari and Attarpour 2019: Figure 13). At **Tal-i Malyan** itself, settlement restarted across the mound at *c.* 2200

BC following a 400-year hiatus, in the so-called Kaftari phase, which lasted till 1600 BC (Sumner 1989b; Alden *et al.* 2005; Petrie *et al.* 2005). The resurgence of Malyan, which expanded to 130 ha encircled by a wall at this time, coincides with the decline of the Akkadian imperial project and may be connected to its location along major trade routes of luxury materials moving from the east of Iran, from sites such as Shahr-i Sokhta (Thornton 2012: 599; Chapter 9). As Potts (2016: 144) summarises, archaeobotanical remains from Tal-i Malyan indicate that wheat was the major cereal for human consumption while barley was grown mainly for animal fodder. Weed species indicate use of both irrigation and dry farming methods (Miller 1982, 1990) while alongside sheep, goats and cattle, horses make an early appearance in the zooarchaeological record of the region (Zeder 1986). Zebu cattle also make their appearance, at least in the form of distinctive clay figurines (Sumner 1974: Figure 11). Kaftari-related assemblages are found across Fars and along the Persian Gulf coast (Petrie *et al.* 2005, 2016).

Grand Viziers of Elam: the Old Elamite period, 1950–1500 BC

From *c.* 1950 BC, the title *sukkalmah* was used by the rulers of Elam as a designation of their supreme power. We saw above the origins of this Sumerian term in the Ur III period to designate the viziers of Girsu who oversaw trade between Lower Mesopotamia and the east. The development of the *sukkalmah* dynasty out of the kingdom of Shimashki is obscure but there is no evidence for a sharp break between them (Álvarez-Mon 2012: 747–750, 2020: 185–230; De Graef 2012; Glassner 2013; Potts 2016: 148–175). During the first half of the second millennium BC Elam under the *sukkalmahs* played a major role in the interregional politics and cross-cultural engagement of wider Southwest Asia, interacting on equal terms peaceable or not with the great powers of the day, including Assyria under Shamshi-Adad (1813–1781 BC), Babylonia under the rival powers of Isin, Larsa and Babylon under Hammurabi (1792–1750 BC), the Diyala region under the kingdom of Eshnunna and the great city of Mari on the Middle Euphrates in Syria (Liverani 1990). Elam also engaged with regions to the south and east, including Dilmun (Bahrain), Magan (Oman) and Bactria (northern Afghanistan and southern Uzbekistan). Within the Elamite state at this time, power lay within a hypothetical hierarchy headed by the *sukkalmah* or Grand Vizier, assisted by a *sukkal* or Vizier of Elam and a *sukkal* or Junior Vizier of Susa, usually related to each other by blood. Additionally, there was a role for the "sister's son" (*ruhushak*), which may relate to royal descent through the maternal line, a possible indication of the important political role of women at this time, not solely as currency in inter-dynastic marriage brokering. More broadly, there is much evidence across the spectrum of Elamite economic and legal texts for significant autonomy for women in conducting a range of activities, including issue of contracts, sales and rentals, inheriting property, witnessing legal texts, and participating in agricultural and craft production roles (Dabbagh 2019).

Our focus as ever is on the archaeological evidence relating to the period rather than on the sequences of historical events, fascinating as they are (for which, see Carter and Stolper 1984; Kuhrt 1995; Van De Mieroop 2004; De Graef 2012; Liverani 2014; Potts 2016: 148–161; Peyronel 2018). In sum, the *sukkalmahs* of Elam in the early-mid second millennium BC show themselves to be as powerful and capable as any of their contemporary rivals and allies, as is vividly demonstrated in royal correspondence of the time, in particular the letters in the Mari royal archives of king Zimri-Lim (1776–1761 BC) (Heimpel 2003). These letters demonstrate the ongoing importance of the

Figure 10.26 Tappeh Senjar, cylinder seal and modern impression, in the Anshanite style (Sardari and Attarpour 2019: Figure 13) (image courtesy of Alireza Sardari).

trans-Tigridian corridor route, skirting the western edge of the Zagros foothills, as shown by a letter that relates how Elamite messengers from Susa travelled to Babylon via Der (Figure 10.1) (Heimpel 2003: 327). The supreme status and prestige of the *sukkalmah* of Elam is sharply indicated in Syrian and Babylonian royal letters, including from the kingdom of Qatna, in which Amorite kings address each other as "brothers" while addressing the *sukkalmah* as "father"(Álvarez-Mon 2013a: 223). Elam's power during the age of the *sukkalmahs* was most severely challenged by a series of military campaigns led by the Babylonian king Hammurabi who defeated an army of Elam comprising components from Marhashi, Subartu, Gutium, Eshnunna and Malgium, prior to his famous conquest of Mari in 1762/1761 BC (Sasson 1995: 911). After this time, the historical sources for the *sukkalmahs* disappear and it is not clear whether or not Elam had become subservient to Babylon following these military defeats.

Critical to Elam's status in these centuries was its role in accessing or channelling the rich natural resources of the uplands of Iran and beyond to the east. Above all, massive transregional demand for tin, originating either in Afghanistan or in much closer sources at Deh Hosein in Luristan (Joannès 1991; Potts 1997: 269, 1999: 169, 2016: 158; Nezafati *et al*. 2006, 2009; Helwing 2009; Peyronel 2013), was basic to international engagement with Elam, with large quantities of this essential metal for bronze production reaching the king at Mari and being transshipped on to the kingdoms of the Levant to the west, including Ebla. Such material movements underpinned the rise to power of Assur on the Tigris and its trade of tin and textiles to newly emergent Bronze Age powers of Anatolia in the Old Assyrian period (Barjamovic 2011). The time of the *sukkalmahs* was the heyday of this sophisticated yet fragile network of redistribution of natural resources across hundreds of kilometres of ancient Southwest Asia, and the central role of Elam in this process is well summarised by Potts (2016: 172): "At no later period did any Elamite monarch enjoy a role comparable to that played by the *sukkalmah* in the balance of power between Babylon, Assyria, Eshnunna and Mari." A corollary to this engagement is the wealth of onomastic evidence for the presence of people of Elamite origin across Babylonia through the second millennium BC, from a wide range of social strata and in many varied occupations, including royal officials, soldiers, messengers, landowners, paid workers and slaves (Zadok 1987).

Archaeological evidence for the *sukkalmah* episode of Elam's history includes a major expansion of settlement on the Susiana plain and adjacent plains (Moghaddam and Miri 2003, 2007), including at **Chogha Mish** with the construction of fortifications and the discovery of a remarkable vessel of soft bituminous stone in the form of cylinder with an attached wild goat (Figure 10.27) (Kantor 1977; Alizadeh 2008: 30). At **Susa** itself occupation covered up to 85 ha (Carter and Stolper 1984: 150). Through the period 1700–1400 BC, new neighbourhoods of domestic buildings were repeatedly laid out in Chantier A north of the Ville Royale at Susa in a closely packed manner with narrow streets to minimise the effects of temperature extremes and wind, with burial of the dead under room floors (Figures 10.3, 10.28) (Ghirshman 1965; Gasche 2013; Peyronel 2018). Small houses jostled for space with large villas, clearly elite residences including the so-called House of Rabibi, composed of ranges of rooms arranged around a courtyard and with a reception hall featuring two pairs of pilasters (Vallat 1999a; Mofidi-Nasrabadi 2018a; Álvarez-Mon 2020: 185–188). Parallels for this mode of elite construction have been drawn with the Royal Palace at Qatna, Hall B, which may indicate shared influences in architectural design (Álvarez-Mon 2013a: 224). Further connections between Susa and Qatna in the early second millennium BC

Figure 10.27 Chogha Mish, vessel of bitumen compound (Nokandeh 2017: Figure 29) (photo credit: Neda Hossein Tehrani and Nima Mohammadi Fakoorzadeh, National Museum of Iran).

Figure 10.28 Susa, Ville Royale, Chantier A, plans of levels XI to XV (after Gasche 2013: Figure 5).

include worship of the deity NIN.É.GAL whose worship at both sites probably starts in the Ur III period. Building inscriptions from Susa and other sites in Khuzestan and Fars during this period record a significant amount of royal-sponsored activity including construction of ramps and temples for Ishmekarab and Inshushinak (Potts 2016: 162). Occupation of this period is also attested in the earliest levels of the Middle Elamite site of **Haft Tepe**, southeast of Susa (Mofidi-Nasrabadi 2014; see below).

Textual evidence for the period 2000–1500 BC includes more than 1400 tablets from **Susa**, almost all in Akkadian and including scribal exercises in the Mesopotamian tradition adapted for the local linguistic environment at Susa (Figure 10.29) (De Graef 2007; Tanret and De Graef 2010; Malayeri 2013), indicating the practice of Mesopotamian modes of economic organisation at Susa in this period. A unique collection of seven texts from Susa, unparalleled in Mesopotamia and probably found in association with a group of tombs, appear to relate to funerary rites to be conducted prior to burial of the deceased in the nearby tombs (Tavernier 2013a). Additionally, a group of 84 early second millennium BC tablets excavated from a large building at the site of **Chogha Gavaneh** in the central-west Zagros region, are in conventional Babylonian style and content, lacking any Elamite or Hurrian influence (Figure 10.30) (Abdi 1999; Abdi and Beckman 2007; Gentili 2012; De Graef 2013: 272; Potts 2020: 59–60), therefore suggestive of a significant degree of Mesopotamian control over this site located on the main access route for highland-lowland communications, an important stretch of the Great Khorasan Road. A Babylonian presence at Chogha Gavaneh may have been significant for the movement of commodities such as tin from Afghanistan or elsewhere westwards to centres such as Eshnunna, Assur and Mari, and an associated development is the intensification of rural settlement through the early second millennium BC in the Zagros as attested on the Firouzabad plain (Niknami *et al.* 2016; Niknami and Mirghaderi 2019).

Large numbers of cylinder seals from **Susa** of this period show a range of regional and interregional connections (Amiet 1972, 1980; Neumann 2013). They include a fine hematite example depicting Mesopotamian deities - the seal was brought from Babylonia or Mari to Susa where an Elamite inscription was added (Carter *et al.* 1992a: 112–113). Susa glyptic of this period shows strong connections with regions along the trans-Tigridian corridor including the Diyala and Hamrin regions and the kingdom of Eshnunna in particular (Peyronel 2007, 2013; Álvarez-Mon 2020: 196–202), as well as links to the Cappadocian style of central Anatolia in the early second millennium BC. Many seals include depictions of snakes and water, including a god seated on a snake throne (Figure 10.31g), and there are also stamp seals in the typical Persian Gulf or Dilmun style, known from the islands of Bahrain and Falaika and widely across adjacent regions (Amiet 1986a). Rare Mesopotamian examples of carved vessels of bituminous compound, a Susa speciality (Figure 10.32) (Connan and Deschesne 1996; Potts 2016: 165–166; Álvarez-Mon 2020: 188–193), have been found in the Sinkashid Palace at Uruk and in the Temple of Ishtar Kititum at Tell Ischali/Neribtum, indicative of "reciprocal gift exchange between the highest social hierarchies of the Eshnunna and Elam kingdoms" (Peyronel 2013: 57). Ceramics at Susa and other sites of the *sukkalmah* horizon continue in the Mesopotamian tradition, with the addition of fine grey ware vessels with incised and punctate decoration with white infill, found over an extensive region from Nuzi in the northwest to Tal-i Malyan in the southeast and many locations between (Figure 10.33) (Carter 2011a; Potts 2016: 163; Álvarez-Mon 2020: 194–196). Terracotta figurines of male and female humans from Susa find

Figure 10.29 Susa, school tablet with Sumerian and Akkadian terms (after Malayeri 2013: Figure 5).

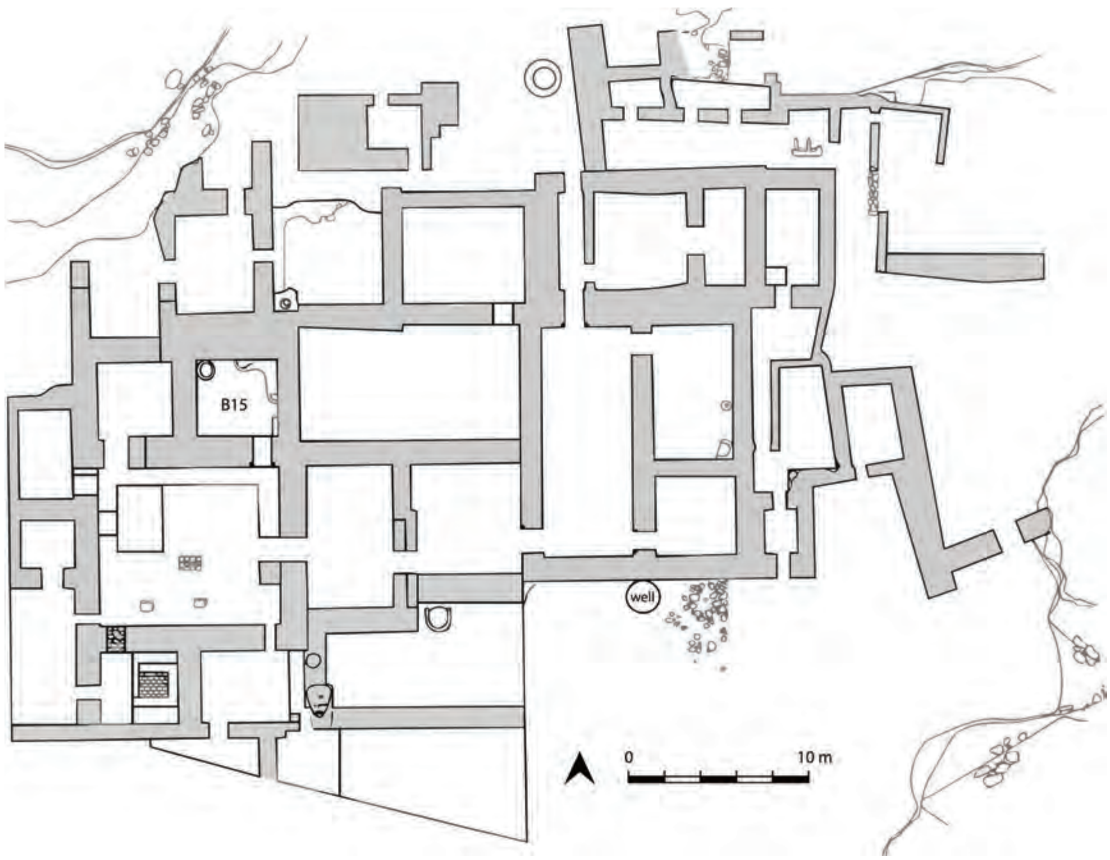

Figure 10.30 Chogha Gavaneh, early second millennium BC building. The cuneiform archive came from room B15 (after Abdi and Beckman 2007: Figure 5).

Figure 10.31 Old Elamite seals and seal impressions from Malyan (a) and Susa (b-h) (Álvarez-Mon 2020: pl. 72) (image courtesy of Javier Álvarez-Mon).

Figure 10.32 Susa, vessels of bitumen compound from the Shimashki and Old Elamite periods, *ca*. 2050–1500 BC (Álvarez-Mon 2020: pl. 68) (image courtesy of Javier Álvarez-Mon).

Figure 10.33 Susa, incised and infilled grey-ware vessels, *ca*. 1880–1700 BC (Álvarez-Mon 2020: pl. 70) (image courtesy of Javier Álvarez-Mon).

Figure 10.34 Kurangun, general view of relief scenes (Álvarez-Mon 2019: pl. 10b) (image courtesy of Javier Álvarez-Mon).

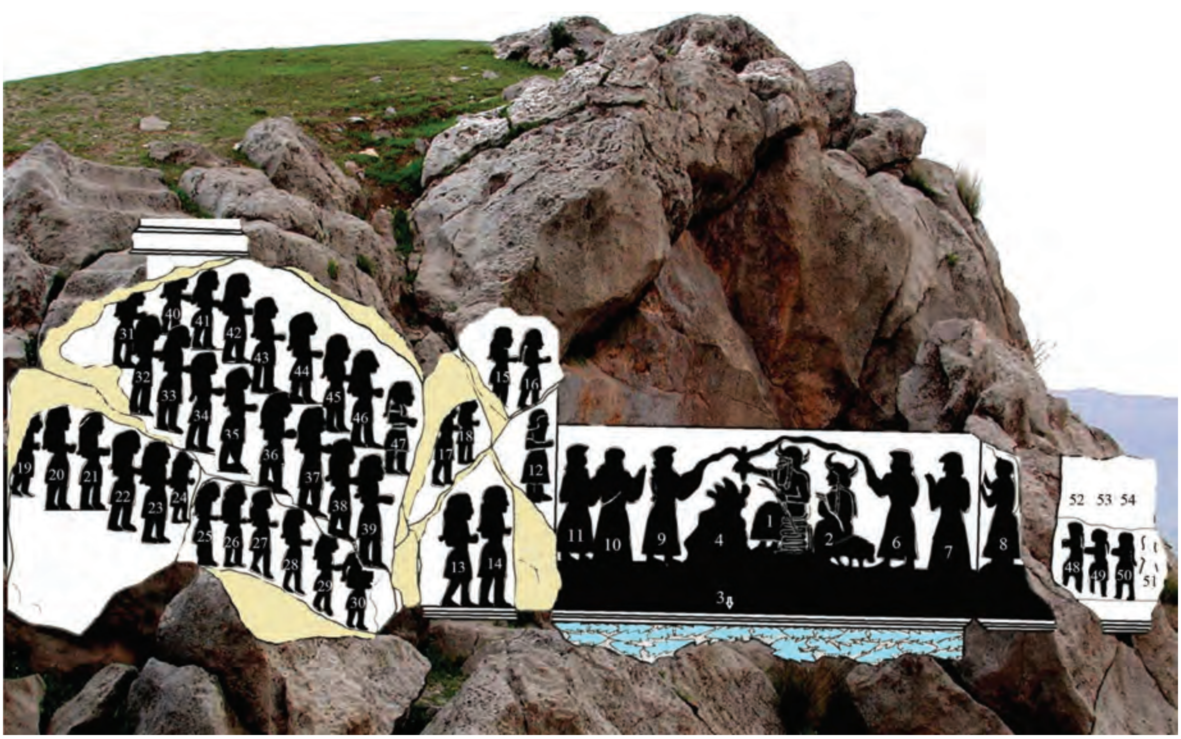

Figure 10.35 Kurangun, representation of carved relief scenes (Álvarez-Mon 2019: pl. 11) (image courtesy of Javier Álvarez-Mon).

many parallels in contemporary Mesopotamian assemblages (Spycket 1992a; 1992b; Daems 2018; Álvarez-Mon 2020: 218–224), while metal jewellery, weapons, tools and vessels, principally of tin-bronze, include distinctive types of socketed axes of so-called Bactrian type (Tallon 1987; Steinkeller 2014b; Helwing 2018: 128). Soft-stone flasks and a small number of items of adornment also show ongoing connections with Bactria far to the northeast (Potts 2016: 169).

Early Elamite rock reliefs in the region of Fars and upland Khuzestan date to this period, as recently published *in extenso* by Javier Álvarez-Mon (2019, 2020: 204–213). They include depictions at **Xong-e Azdhar** at the north border of the Izeh plain, and at **Shah Savar** east of Izeh town, of groups of individuals standing before a seated deity or monarch (Vanden Berghe 1963; Álvarez-Mon 2019: 11–14). Most significant is the set of carved scenes at **Kurangun** in western Fars of 17th century BC date (Figures 10.34–10.35) (Potts 2004b; 2013a; 2016: 169–173; Binder 2013; Álvarez-Mon 2014, 2018b: 611, 2019: 15–22). Together constituting an outdoor sanctuary, these scenes were cut into a cliff face 80 m high, dramatically overlooking the Fahliyan river in the Mamasani region on the route linking Susa with Anshan/Malyan. The central panel at Kurangun depicts seated male and female deities, probably the major Elamite deities of Napirisha and Kiririsha (Jahangirfar 2018), with the male deity sat on a snake-throne, probably of *sukkalmah* date according to glyptic parallels for this scene (Figure 10.31g). A similar rock-carved scene of a deity seated on a snake-throne is found at **Naqsh-i Rustam** near Persepolis but has been overcut by a later Sasanian relief (Potts 2016: 172; Álvarez-Mon 2019: 23–26). Additional scenes at Kurangun of lines of worshippers were added through the Neo-Elamite period, 800–550 BC (Chapter 11).

The mature Elamite state: the Middle Elamite period, 1500–1100 BC

During the fifteenth century BC Mesopotamia was greatly impacted by the ascent to power of the Kassite dynasty, a people originating in the central Zagros mountains although early sources are not clear as to their precise origin (Brinkman 1976; Reade 1978; Zadok 1987, 2018b; Álvarez-Mon 2012). There are indications that the Kassites brought the first horses from the Zagros into Babylonia and that they also served as mercenaries (Zadok 1987: 17). Other peoples impinging on Babylonia from the mountains to the east at this time include the Gutians, Turukians and Hurrians (Zadok 1987). As regards Elam, there is no evidence of a significant hiatus between the age of the *sukkalmahs* and the new dynasties entitled "kings of Susa and Anshan," even if the historical evidence suggests a major dynastic avulsion had taken place (Carter and Stolper 1984; Carter *et al.* 1992b; Mofidi-Nasrabadi 2018b). Through the later second millennium BC, the Elamite state exercised occasionally far-reaching power over western Iran and into much of Mesopotamia (Potts 2016: 176–248). Elamite-Babylonian relations through these centuries alternated between episodes of peaceful intercourse, often cemented through inter-dynastic marriages, and outbreaks of outright war, often stimulated by claims to kingship arising from those very same inter-dynastic marriages (van Dijk 1986; Zadok 2018b).

Settlement patterns in Elam indicate agglomeration of peoples in urban centres at the expense of rural settlement (Moghaddam and Miri 2007: 38), suggesting that the economic basis of Elam was increasingly dependent on livestock herding, trade and booty rather than on arable crop production (Schacht 1987: 180–184). At **Susa** the Elamite kings displayed their power and devotion by constructing and reconstructing major temples (Potts 2010a), taking care to insert inscribed bricks (Roche 2012), stelae and sculptures to ensure full divine and secular appreciation of their piety. Such renovations could include the replacement of unbaked brick structures or parts thereof with more durable and impressive moulded terracotta brick constructions, culminating by the 12th century BC in the use of glazed brick doors and gateways at a range of Susa temples including those of Ninhursag and Inshushinak (Figure 10.3) (Carter *et al.* 1992b: 123; Daucé 2018). Also distinctive at Susa through the centuries of the later second millennium BC is the elaboration of human burial practices (Gasche and Cole 2018: 752–753), a trend that reaches its apogee in the royal funerary cults attested at Kabnak (Haft Tepe) and Al Untash-Napirisha (Chogha Zanbil) (Carter 2011b), as discussed below. Across Iran, only at Susa do we see the practice of burying the human dead under the floors of domestic houses, a marked indication of Susa's persistent Mesopotamian influences.

Archaeologists and historians conventionally discuss the Middle Elamite period in three phases each with its own dynasty (Vallat 1994; Mofidi-Nasrabadi 2018b: Table 12.1; Zadok 2018b): Middle Elamite I and the Kidinuids (1500–1400 BC), Middle Elamite II and the Igihalkids (1400–1200 BC), and Middle Elamite III and the Shutrukids (1200–1100 BC). We briefly treat each of these in turn, focusing once more on the archaeological evidence for this period.

The cult of craft and death: Middle Elamite I archaeology and Haft Tepe (Kabnak)

The Kidinuid dynasty at Susa comprises five kings beginning with Kidinu, who called themselves "kings of Susa and Anzan," Anzan being a variant of Anshan. Most of the Kidinuid kings are known from scant evidence, including inscribed cylinder seals and texts (Potts 2016: 176–180). Most notable of the Kidinuid kings is Tepti-ahar, who took the title "king of Susa and Anzan, servant of Kirwashir and Inshushinak" and whose reign can be dated to the late 15th century BC (Álvarez-Mon 2013a: 225). Tepti-ahar's great achievement, and major contribution to the archaeological record of Iran, was his foundation or re-foundation of the religious and royal mortuary complex of **Haft Tepe** (ancient Kabnak) 10 km southeast of Susa, a site already occupied in the early second millennium BC (Mofidi-Nasrabadi 2003–2004, 2011, 2013, 2014, 2018a, 2018b; Mofidi-Nasrabadi *et al.* 2010; Potts 2016: 184–197; Gasche and Cole 2018: 750–752; Álvarez-Mon 2020: 231–257). Despite its name ("Seven Mounds"), Haft Tepe comprises a total of 14 mounds over an area of at least 30 ha and perhaps up to 200 ha (Mofidi-Nasrabadi 2018b: 237–240). The site was excavated by Ezat Negahban from 1965 to 1978 (Negahban 1969, 1991) who focused on the so-called "Tomb-Temple Complex" and associated "Terrace Complexes I and II" (Figure 10.36), and by Behzad Mofidi-Nasrabadi since 2003 (Mofidi-Nasrabadi 2013, 2014, 2018a). The impressive excavated structures were made of mudbrick with occasional use of baked and glazed brick for outdoor surfaces and special features (Daucé 2018). Geophysical prospection of the site has identified five monumental complexes, some with walls at least 100 m long and 10 m wide (Figure 10.37).

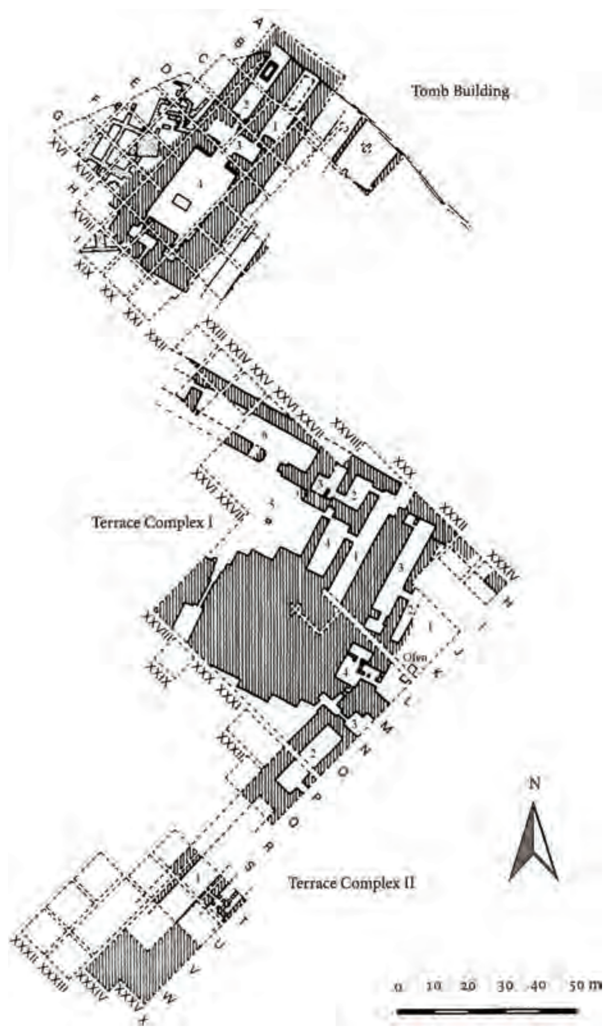

Figure 10.36 Haft Tepe, plan of areas excavated by Ezat Negahban (after Mofidi-Nasrabadi 2013: Figure 3).

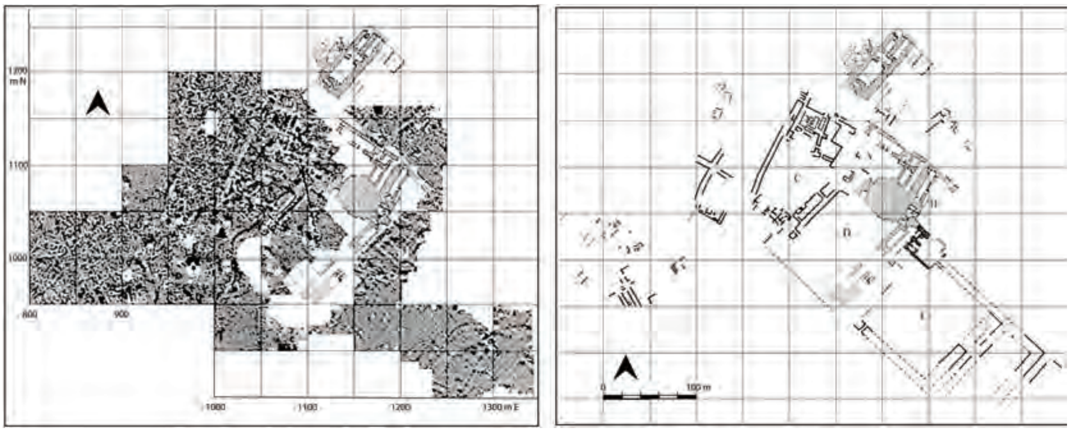

Figure 10.37 Haft Tepe, geomagnetic map and interpretation (after Mofidi-Nasrabadi 2013: Figure 4).

Figure 10.38 Haft Tepe, clay head and mask, 15th century BC (Álvarez-Mon 2020: pl. 90) (image courtesy of Javier Álvarez-Mon).

In the excavated structures at Haft Tepe, gypsum plaster was used lavishly to cover wall surfaces, ceilings and baked brick floors, while basins and water channels were coated with bitumen for proofing. Polychrome motifs were incised or painted on some of the halls and ceilings (Álvarez-Mon 2005b; 2012: 751). In Terrace Complex I, covering 40 × 44 m in area, there appears to have been a scribal school and workshops for highly specialised craft activity, including manufacture of life-like, life-size painted terracotta human heads that may represent members of the Elamite court (Figure 10.38) (Álvarez-Mon 2005a; 2018b; 2020: 237–245). An almost complete elephant skeleton in one trench plus other craft debris suggests significant ivory working. Hundreds of clay sealings with seal impressions (Figure 10.39) (Amiet 1996; Mofidi-Nasrabadi 2011; Ascalone 2018: 641) plus more than 650 inscribed clay tablets from across the site (Figure 10.40) record receipts and disbursements of a wide range of daily provisions and valuable commodities including the assignment of metals to specific workshops (Helwing 2018: 120). These documents, a few of which were found at **Abu Fandowa** located 1 km northwest of Haft Tappeh, are written in Akkadian but contain largely Elamite names (Herrero 1976, 1991; Herrero and Glassner 1990; Negahban 1991; De Graef 2013: 275; Basello and Giovinazzo 2018). At Haft Tepe some of the tablets appear to have been stacked on shelving made from tamarisk wood, excavated from a room that functioned as a scribal workroom (Mofidi-Nasrabadi 2013: 162). The function of Terrace Complex I appears to have been as a temple precinct wherein a range of craft activities, including scribal training, writing and extispicy, were undertaken in order to sustain the livelihoods of the resident gods, priests, workers and dependents (Potts 2016: 189).

The main tomb complex at Kabnak (Figure 10.41) was probably built for Tepti-ahar himself – two adult individuals laid out on a platform may have been the corpses of the king and his queen, with retainers buried around them. A stele fragment from the tomb complex names Tepti-ahar and gives a record of offerings of flour, beer and

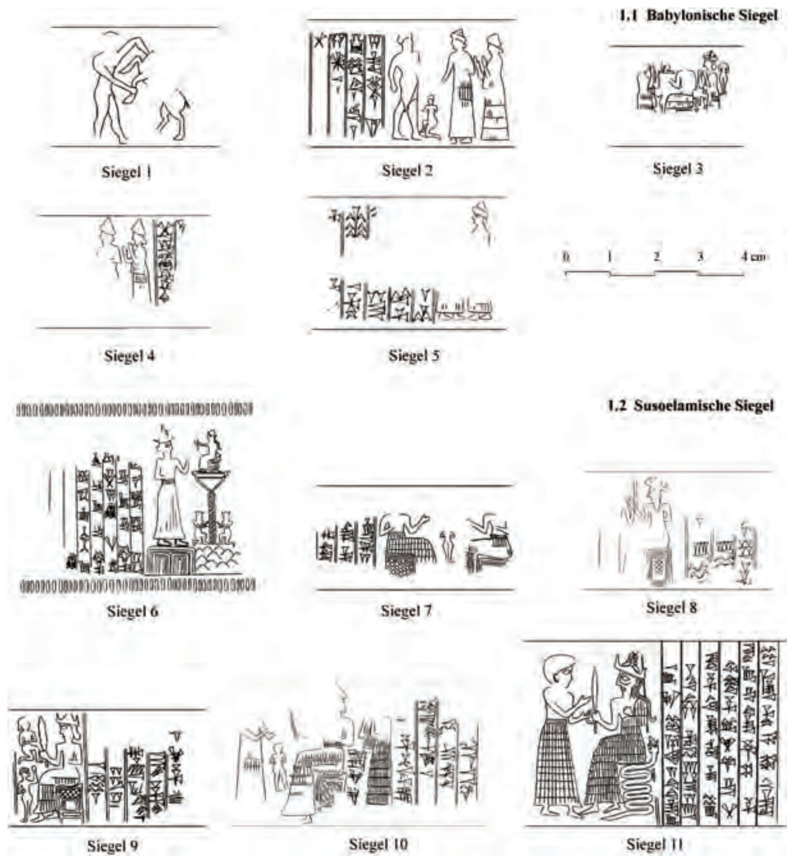

Figure 10.39 Haft Tepe, selected seal impressions (after Mofidi-Nasrabadi 2011: Taf. 7).

Figure 10.40 Haft Tepe, cuneiform tablets under excavation (Mofidi-Nasrabadi 2011: Taf. 6) (image courtesy of Behzad Mofidi-Nasrabadi).

sheep to be made to the deceased throughout the year by six guards who are clearly assigned the role of curating the tomb and its rites, while eight women are tasked with sweeping the chambers' floors (Reiner 1973a; Potts 2016: 185, 191). The guards are instructed to sacrifice "before the chariot of Inshushinak" and to honour a festival of "the chariot of the god" (Potts 2016: 190), details that chime intriguingly with a miniature copper figurine from Susa of a deity seated in a chariot (Tallon *et al.* 1989) and with mention in the Haft Tepe texts of chariot fittings. Equally intriguing is the fact that amongst the faunal remains from Haft Tepe, equids represent more than

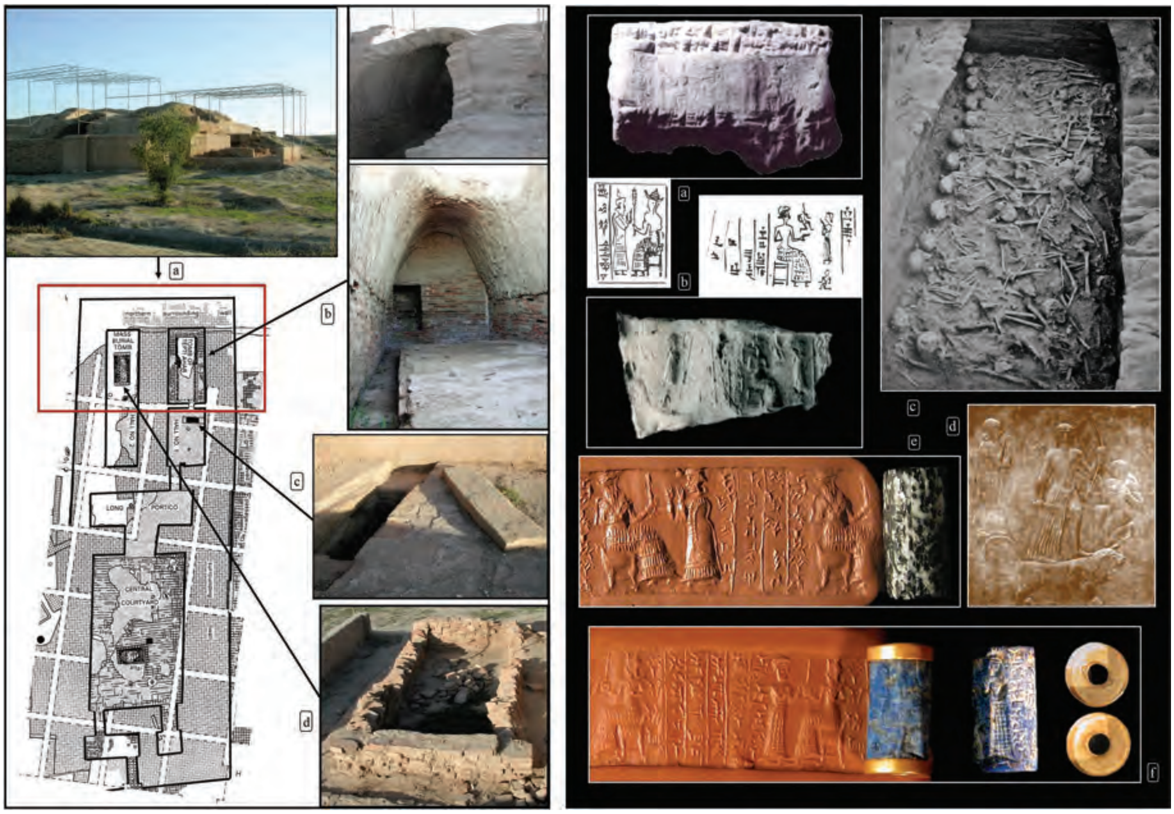

Figure 10.41 Haft Tepe, main tomb complex (Álvarez-Mon 2020: pls 86, 88) (image courtesy of Javier Álvarez-Mon).

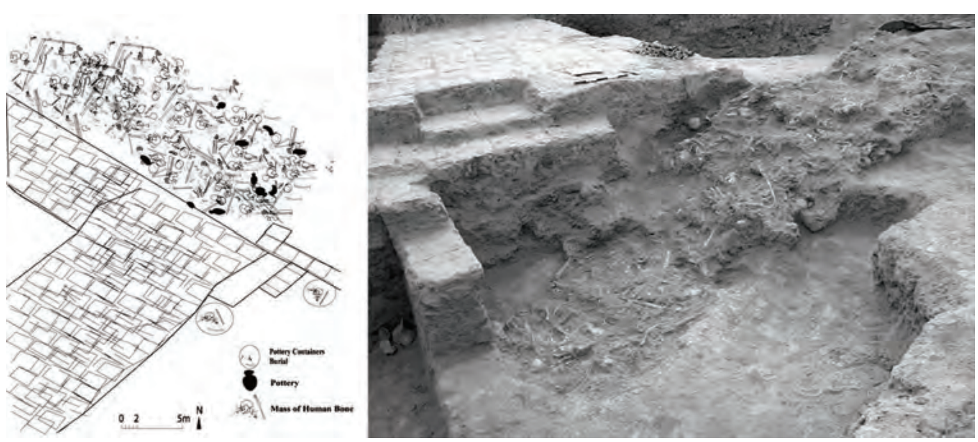

Figure 10.42 Haft Tepe, plan of mass burial in Trench 298, c. 1400 BC (Mofidi-Nasrabadi 2014: Taf. 31.2; Jafari 2018: Figure 2) (image courtesy of Behzad Mofidi-Nasrabadi).

35% of all identified species, including donkeys, mules and hinnies (Mohaseb and Mashkour 2012; Potts 2014: 53), animals that could have served to pull chariots on cultic processions (from Susa to Kabnak?).

The walls of Tepti-ahar's tomb stood 3.75 m high and the main chamber of Hall 1 was roofed with a massive barrel vault of brick, the interior wall faces plastered and decorated with geometric designs. Adjacent to Hall 1 a smaller room, Hall 2, also barrel vaulted, contained the remains of 23 individuals, possibly retainers sacrificed in advance of the main royal burial. Further human burials have been excavated at the north-western edge of the site beyond Complex C including more than 100 individual burials in pits and pot graves and an extraordinary mass grave containing at least 228 male and, principally, female adults and subadults (Figure 10.42) (Jafari 2018).

Although contained within a matrix of ash there is no evidence for cremation of these individuals. Burial goods comprise some complete ceramic vessels and bronze items. The excavator interprets the mass grave as containing the rapidly gathered remains of individuals killed during the sacking of the city (Mofidi-Nasrabadi 2014), but the bioarchaeologist working on the human remains points to the lack of evidence for any perimortem trauma and for weapons associated with the burial (Jafari 2018). Isotopic analysis of some of the individuals in the mass grave suggests a limited degree of mobility amongst the interred population (Jafari 2017). Some 900 metal objects were found at the site, not all in graves, including tin bronze ingots, daggers and spearheads (Rafiei-Alavi 2012, 2015, 2019; Helwing 2018; Oudbashi *et al.* 2019).

In any case, the entire site appears to have been violently destroyed, as attested by layers of ash and burnt roof beams, possibly by a Kassite Babylonian army (Álvarez-Mon 2013a: 226). Following the site's destruction, Middle Elamite burials with pottery were inserted into the ruins of some of the buildings. Much remains obscure about this extraordinary complex so richly devoted to cult, craft and death. It is not even clear whether Tepti-ahar resided at Kabnak or at Susa as we have no convincing palace of this date from either site.

Beyond the extraordinary archaeology of Haft Tepe, Middle Elamite I remains were excavated at **Susa**, where in the Ville Royale area domestic houses and a structure entitled Building T were exposed. Exceptional finds from Building T include much pottery, 50 figurines of naked coiffured females clutching their breasts (Figure 10.43) (Curtis 2018; Daems 2018: Figure 37.1; Álvarez-Mon 2020: 248–251), and figurines of lute-players and model beds laid upon by naked heterosexual couples, suggestive of a house dedicated to sexual engagements (Steve *et al.* 1980). Inscribed bricks further indicate that Tepti-ahar constructed at Susa a baked-brick building dedicated to Inshushinak (Potts 2016: 183). Practices of human burial at Middle Elamite Susa include construction of vaulted tombs, jar burials and burial under house floors, with evidence for multi-staged burials involving the movement of skeletal remains through several phases of disposal, including the use of ceramic "feeding tubes" and food offerings to sustain the dead long after death, as well as selected use of funerary masks or clay heads (Carter 2011b). The lack of excavated evidence for royal tombs of the rulers of Middle Elamite Susa may be explained by the content of the following text of Assurbanipal following

Figure 10.43 Susa, terracotta figurines of females clasping breasts (Álvarez-Mon 2020: pl. 97) (image courtesy of Javier Álvarez-Mon).

his sack of Susa in 646 BC, sharply reminding us that ideological intolerance and deliberate destruction of locally cherished heritage assets have deep historical roots:

> I pulled down and destroyed the tombs of their earlier and later kings, who had not revered the deities of Ashur and Ishtar my lords and I exposed them to the sun. I took away their bones to Assyria, I put restlessness on their ghosts, I deprived them of food-offerings and libations of water
>
> (Saggs 1984: 14, quoted in Carter 2011b: 50)

Middle Elamite I occupation is also attested at **Farukhabad** on the Deh Luran plain and at **Sharafabad** in northern Susiana, while settlement patterns in Susiana and the Ram Hormuz suggest the rise to prominence of a range of middle-level settlements (Carter 1981). At **Tal-i Malyan** and the Kur river basin there appears to be a settlement gap of some 250 years following the end of the Kaftari period at 1600 BC, which Potts (2016: 182) understands to mean that use of the Middle Elamite title "king of Susa and Anzan" was "conventional and anachronistic, much as the title 'king of Kish' was used by later Old Babylonian rulers."

"Such as the ancients never made": Middle Elamite II archaeology and Chogha Zanbil (Al Untash-Napirisha)

Some of the Susa evidence suggests a short hiatus between the Kidinuid dynasty of Middle Elamite I and the Igihalkid dynasty of Middle Elamite II (Potts 1999: 205; Mofidi-Nasrabadi 2018b: 234–236). Inscriptions from the site of **Deh-e Now**, close to Haft Tepe, give an indication that king Igi-halki may have come from this location and in due course usurped the throne of Elam (De Graef 2013: 276). Kings of the Igihalkid dynasty were intimately connected with the thriving Kassite dynasty in Babylonia and it is possible that the Kassite king Kurigalzu I destroyed Kabnak and helped to install the new dynasty in Elam (Álvarez-Mon 2013a: 226). Through the course of five generations, males of the Igihalkid line married Kassite princesses, closely tying the two dynasties together (Potts 2016: 202). The most significant king of the Igihalkid dynasty was Untash-Napirisha (*c.* 1340–1300 BC) who married a daughter of the Kassite king Burna-Buriash II and was himself the son of a Kassite princess. Perhaps not surprisingly, the Elamite line eventually staked claim to kingship over Babylonia, leading to the sack of Babylon in 1150 BC and the termination of the Kassite line there (van Dijk 1986; Vallat 1999b).

The Elamite king Untash-Napirisha personifies the internationalism of his age, of Kassite descent through his mother and related by marriage to the Egyptian Pharaoh Amenhotep IV (Akhenaten) and the Hittite king Shuppiluliuma. Untash-Napirisha constructed a vast new religious complex called Al Untash-Napirisha, modern-day **Chogha Zanbil** (see below), one of the major archaeological sites of Iran and one of the first heritage sites of Iran to be inscribed on the UNESCO World Heritage List (Lantos 2013). The cultic complex was laid out on an elevated plateau overlooking the plain of the Diz River and facing the probable ancestral city of Deh-e Now 7.5 km to the north, a site that expanded to 9.5 ha with excavated houses and graves of the Middle Elamite period (Mofidi-Nasrabadi 2010). Evidence for Untash-Napirisha's building activities is widespread across south-western Iran, with inscribed bricks found at **Tol-e Bormi** (= ancient Huhnur: Mofidi-Nasrabadi 2005; against this identification, see Alizadeh 2013) and several other sites in the Ram Hormuz region. Elamite overtook Akkadian as the major written language of Elam during the Igihalkid dynasty, although Akkadian inscriptions and Mesopotamian scholarship continued at Susa (Stolper 1992c; De Graef 2013: 276; Tavernier 2018b). At Al Untash-Napirisha, inscriptions include temple building dedications with curse formulae in both Akkadian and Elamite (Reiner 1969).

From **Susa** (Figure 10.44) we have brick inscriptions in Middle Elamite attesting at least 11 different major episodes of temple building and statue carving commissioned by Untash-Napirisha to the glorification of a broad array of deities (Potts 2010a; 2016: Table 7.8). The only one of these buildings at Susa archaeologically attested is the great temple of Inshushinak, brusquely excavated in the late 19th century, which was decorated with inlaid polychrome wall knobs and glazed relief brickwork (Potts 2016: 210; Daucé 2018). Important finds by de Mecquenem and his team in 1904 in the vicinity of the temple of Inshushinak include two distinct caches of precious artefacts, variously dated as from the 14th to the 12th centuries BC (Carter *et al.* 1992b: 146–153; Pittman 2003b; Álvarez-Mon 2020: 320–326). As articulated by Potts (2016: 210; Tallon *et al.* 1989; Helwing 2018: 130–133), Deposit I was found in a brick container, 1.5 × 1.2 m, and comprised many male and female figurines of copper and tin-bronze, plus half-worked beads, cylinder seal blanks and metal scrap. Deposit II was recovered from the top of a glazed brick platform, 0.96 × 0.64 m, to the south of the temple, and included very fine gold and silver statuettes, only 7.6 cm tall, of male worshippers bearing offerings (Figure 10.45), plus faience figurines also of male worshippers, limestone animal figurines on sledges of bituminous compound (Figure 10.46), a schist whetstone with lion's head finial (Figure 10.47) and an agate bead inscribed in Akkadian "To Ishtaran, Kurigalzu

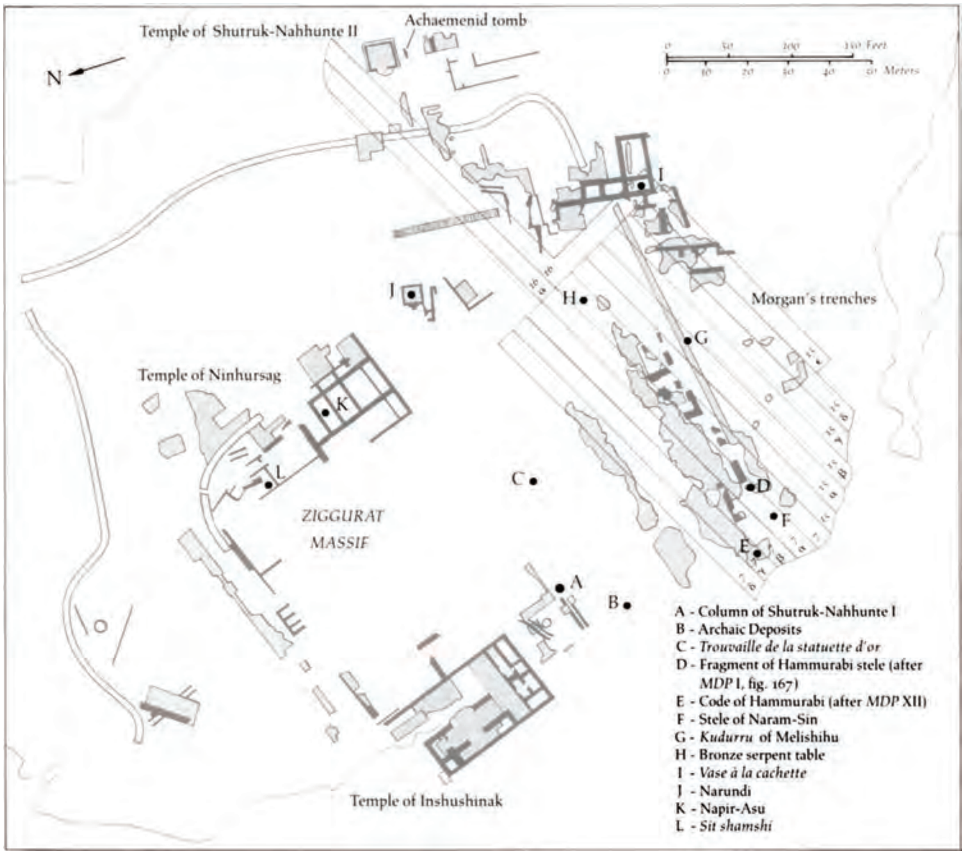

Figure 10.44 Susa, plan showing locations of major finds (after Carter *et al.* 1992b: Figure 41).

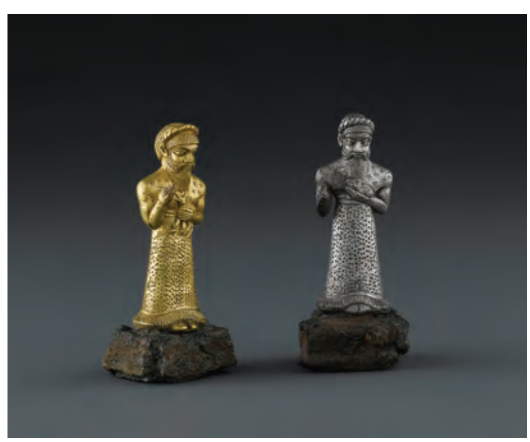

Figure 10.45 Susa, gold and silver statuettes of offering bearers (SB2758, SB2759; photo credit: © RMN-Grand Palais, Musée du Louvre/Franck Raux).

has dedicated [this]." Ishtaran was the city god of Der and Kurigalzu was of course the Kassite king of Babylon, a close relative by marriage of Untash-Napirisha himself. The bead indicates the ongoing strategic significance of the Elam-Babylon alliance and of the trans-Tigridian corridor as the main land route for such engagement.

Evidence for Untash-Napirisha's activities is attested in achievements in metallurgy including advanced use of the lost-wax casting method, first attested at Susa by 2100 BC (Tallon 1987: 310). A striking example of metallurgical expertise takes the form of a 1.29 m-tall statue of queen Napir-Asu, excavated from an upper level in the main sanctuary of the temple of Ninhursag (Figure 10.48) (Potts 2016: 210–213; Álvarez-Mon 2020: 301–304). Its considerable

Figure 10.46 Susa, limestone lion and hedgehog on bitumen compound cart (SB2908, SB2905; photo credit: © RMN-Grand Palais, Musée du Louvre/Hervé Lewandowski).

Figure 10.47 Susa, schist whetstone with gold lion head finial (SB2769; photo credit: © RMN-Grand Palais, Musée du Louvre/Franck Raux).

weight, 1,750kg, probably saved it from removal from this temple. It was cast in two parts using a clay core, coated in copper using the lost-wax method. After removal of the clay core, the interior of the copper shell was filled with solid bronze and much of the statue's engraved surface may originally have been infilled with silver and gold leaf (Carter *et al.* 1992b: 132–135; Meyers 2000; Bridey 2018: 558–559; Helwing 2018: 133–135). Napir-Asu, who may have been the daughter of the Kassite king Burna-Buriash II, is depicted wearing a short-sleeved long dress with elaborate cast and chased decoration (Kawami 2018), including an inscribed Elamite curse against anyone causing damage to the statue.

Of major significance from Susa is the stele of Untash-Napirisha found in five fragments on the Acropole at Susa, and probably brought to Susa from Chogha Zanbil (Al Untash-Napirisha) by the Middle Elamite III king Shutruk-Nahhunte (Figure 10.49) (Vallat 1981; Potts 2016: 213–214; Álvarez-Mon 2020: 290–293). The stele adapts Mesopotamian iconography to portray Elamite mythology, with Untash-Napirisha depicted stood before a seated deity in the top register. Below this scene are depictions of other royal figures, including Napir-Asu, wife of Untash-Napirisha, minor deities and two mouflon-men either side of a sacred tree. Large snakes run up the sides of the stele as well as featuring strongly in the carved registers (Carter *et al.* 1992b: 127–130). At the other end of the social spectrum, hundreds of clay figurines from Susa in the form of breast-clasping naked or bejewelled females, musicians and assorted animals, give some insights into the preoccupations of daily life at Susa through the generations of the second millennium BC (Spycket 1992a; 1992b).

The extraordinary complex at **Chogha Zanbil** (Al Untash-Napirisha), 35 km southeast of Susa, covers *c.* 100 ha enclosed within three perimeter walls, located on a plateau beside the Diz River (Figure 10.50) (Potts 2010a: 60–62, 2016: 214–223; Mofidi-Nasrabadi 2003–2004, 2018a; 2018b: 241–242; Álvarez-Mon 2020: 258–318).

Figure 10.48 Susa, bronze statue of queen Napir-Asu (SB2731; photo credit: © RMN-Grand Palais, Musée du Louvre/Franck Raux).

Figure 10.49 Susa, sandstone stele of Untash-Napirisha (SB12; photo credit: © RMN-Grand Palais, Musée du Louvre/Franck Raux).

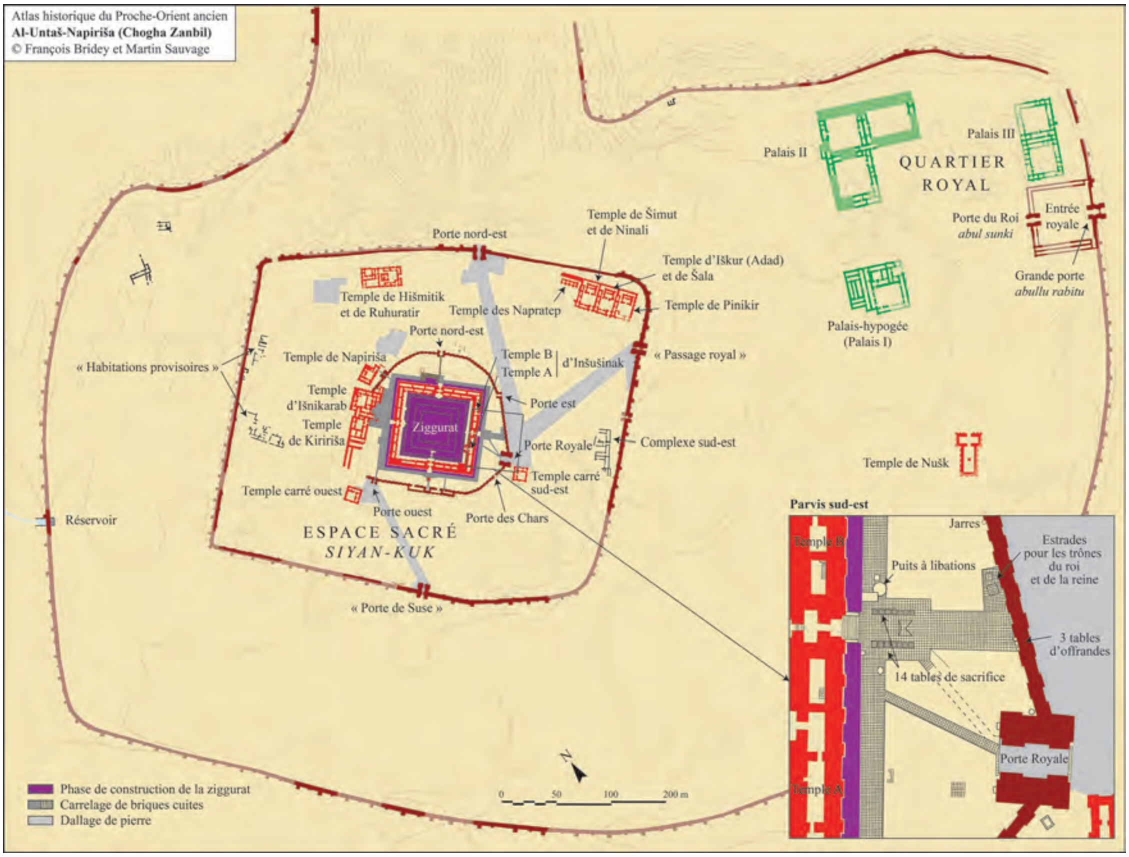

Figure 10.50 Chogha Zanbil, plan of the ancient city to show major features (Sauvage 2020: 106) (image courtesy of François Bridey and Martin Sauvage).

Excavations by Roland de Mecquenem in 1935–1939 and 1946, Roman Ghirshman in 1951–1962, and Behzad Mofidi-Nasrabadi in 1999–2005 have uncovered extensive areas of the site (de Mecquenem and Michalon 1953; Ghirshman 1966, 1968; Mofidi-Nasrabadi 2003–2004). The main feature is a massive stepped ziggurat set within its own walled compound, dedicated to Napirisha and Inshushinak, "one of the most ambitious brick constructions ever erected in the ancient Near East" (Figure 10.51) (Potts 2016: 218). Constructed on top of an earlier large square brick building including a temple of Inshushinak, the ziggurat was built of millions of mudbricks faced by a skin of baked bricks to resist erosion (Figure 10.52). Inscribed bricks of Untash-Napirisha were inserted at frequent intervals and in places bitumen and wood were used to bind courses together. In contrast to Mesopotamian ziggurats, the Chogha Zanbil example is ascended by means of internal, not external, staircases flanked at their bases by pairs of glazed bulls and bird-headed griffins. The shrine on top of the ziggurat was made of glazed baked bricks decorated with geometric patterns and massive glazed knobs, many with inscriptions of Untash-Napirisha (Figure 10.53) (Basello 2012; Tourtet 2013; Daucé 2018). The ziggurat was protected from the elements by a well-designed water management system of bitumen-lined gutters, channelling rainwater into wells and vessels at the ziggurat's base (Álvarez-Mon 2020: pl. 101).

Al Untash-Napirisha was built as a home for worship of a plethora of gods, highland and lowland, Elamite and Mesopotamian in origin, with a total of at least 25 temples within its vast precincts and a ceremonial way leading to the east gate of the outermost perimeter wall (Tourovets 1997; Mofidi-Nasrabadi 2007; Quintana 2018). Key to the city's existence was the desire of Untash-Napirisha to demonstrate and enhance his royal authority through conspicuous and extravagant dedication of resources to the rightful worship of the gods. More than 5,000 inscribed bricks from Chogha Zanbil, mainly in Elamite with some Akkadian examples, attest Untash-Napirisha's determination to please the gods, at least 25 of them, through the construction and maintenance of temples at the site (Potts 2016: Table 7.8). About half of the temples named on the bricks have been identified with excavated structures. Unlike other Middle Elamite sites such as Susa, Haft Tepe and Malyan, no inscribed tablets, as opposed to inscribed bricks, have been found at Chogha Zanbil (Carlson 2014: 32).

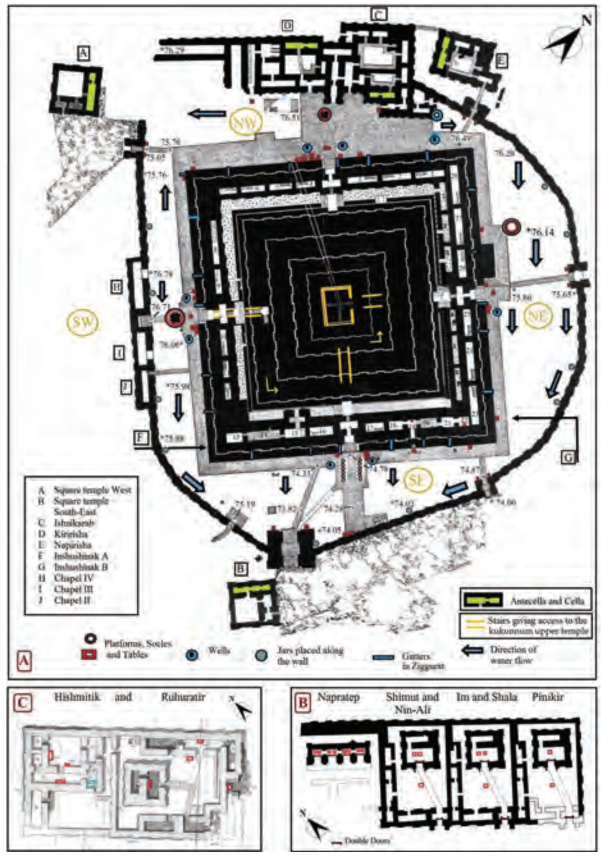

Figure 10.51 Chogha Zanbil, plan of the ziggurat (Álvarez-Mon 2020: pl. 101) (image courtesy of Javier Álvarez-Mon).

Figure 10.52 Chogha Zanbil, view of the ziggurat (photo credit: ivanadb, iStock 506995934).

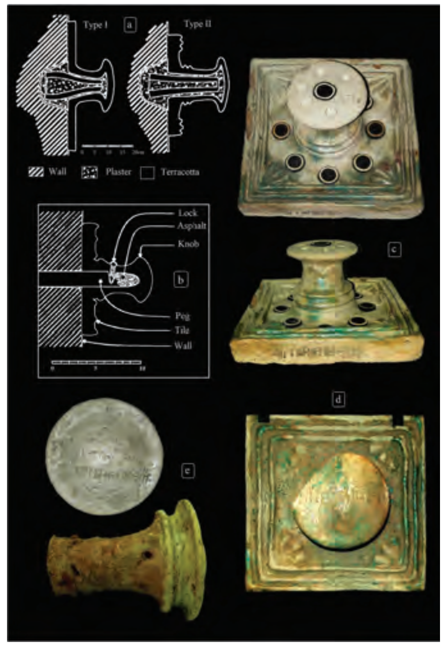

Figure 10.53 Chogha Zanbil, glazed terracotta knobbed tiles from Chogha Zanbil and Malyan (Álvarez-Mon 2020: pl. 108) (image courtesy of Javier Álvarez-Mon).

In an intricate analysis, Evan Carlson (2014: 29, Figure 1) divides the city into 13 districts each of which may include "inscribed" and "uninscribed" space (Figure 10.54):

> The inscribed spaces, such as temples or other public works, and uninscribed spaces comprising residences and buildings connected with daily life, occur throughout the city and were produced concurrently by means of continuous interactive planning among the city's authorities, builders, and residents.

Through demonstration that the city underwent multiple building phases and that it included residential, craft as well as religious quarters, Carlson's important study undermines common assumptions, based on Ghirshman's initial interpretations, to the effect that the city layout as excavated represents an original unified city plan; that the city, at least within the second enclosure wall, contained only temples, and; that at the founder's demise the city was abandoned unfinished and unpopulated.

Finds from the ziggurat compound match the scale and grandeur of the construction itself, including from the north-eastern gateway a blue-glazed guardian zebu bull, 1.35 m tall and bearing on its back an inscription identifying it as "a bull in glazed terracotta, such as the ancients never made" (Figure 10.55) (Steve 1967: 95; Potts 2016: 218; Daucé 2018: 574). A blue-glazed griffon of similar size protected the south-western gateway to the ziggurat. Large numbers of animal figurines, beads and mace-heads as well as more than 150 cylinder seals (Porada 1970; Álvarez-Mon 2020: 304–311), were recovered from small chapels or shrines along the ziggurat perimeter, presumably votive deposits. Finds from temples close to the ziggurat are equally striking, with large quantities of tall ceramic beakers (Mofidi-Nasrabadi 2014), bronze shaft-hole axes, metal weapons, rings and figurines, stone mace-heads and alabaster vessels with good parallels at Middle Assyrian Assur on the Tigris (Potts 2016: 220).

In the so-called Royal Quarter at the northeast of the site, large building complexes were arranged around courtyards, possibly hosting residential and commercial activities (Carlson 2014; Álvarez-Mon 2020: 271–274). Under the floors of a large courtyard building, the *palais hypogée* (Figure 10.56), Ghirshman excavated five monumental vaulted tombs containing an astonishing mix of evidence for funerary practices, including intact skeletons and cremated remains with grave goods in the form of weapons and jewellery (Ghirshman 1968; Gasche and Cole 2018: 748–750). Finds across the building include many goblets and stemmed dishes probably from communal feasting in post-mortem rituals arguably depicted in cylinder seal scenes also found in the *palais hypogée*, while flint knives may have been used for animal sacrifice (Carter 2011b). Of the five underground vaulted tombs, only Tomb IV remained completely intact upon excavation. It contained an adult female laid upon a plastered brick platform adjacent to the burnt remains of two individuals with burnt items of adornment and weapons,

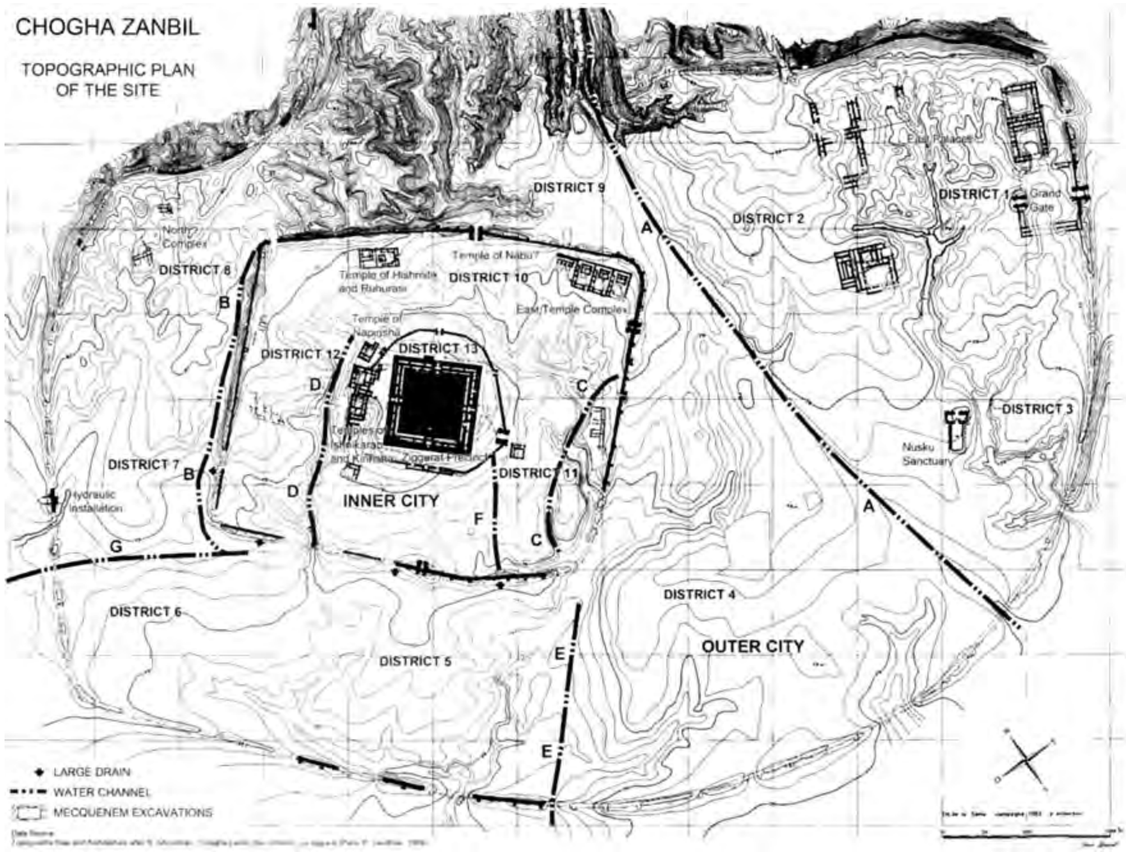

Figure 10.54 Chogha Zanbil, plan of city to show 13 districts (after Carlson 2014: Figure 1).

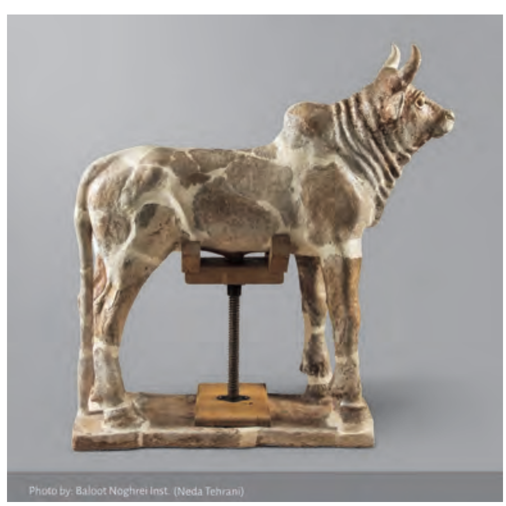

Figure 10.55 Chogha Zanbil, glazed zebu bull with inscription (photo credit: Neda Tehrani, Baloot Noghrei Inst., courtesy of the National Museum of Iran).

all wrapped in red cloth. In Tomb II there were the partially burnt remains of at least five individuals, whereby the deceased had been incinerated whilst wearing personal ornaments and weapons. Accompanying the human remains were small clay ovals with Elamite cuneiform inscriptions perhaps bearing the names of the dead individuals as a means of identifying them to the gods in the afterlife (Steve 1967: 103). The practice of cremation of the dead attested at Al Untash-Napirisha is especially notable as there is no evidence for this practice in the

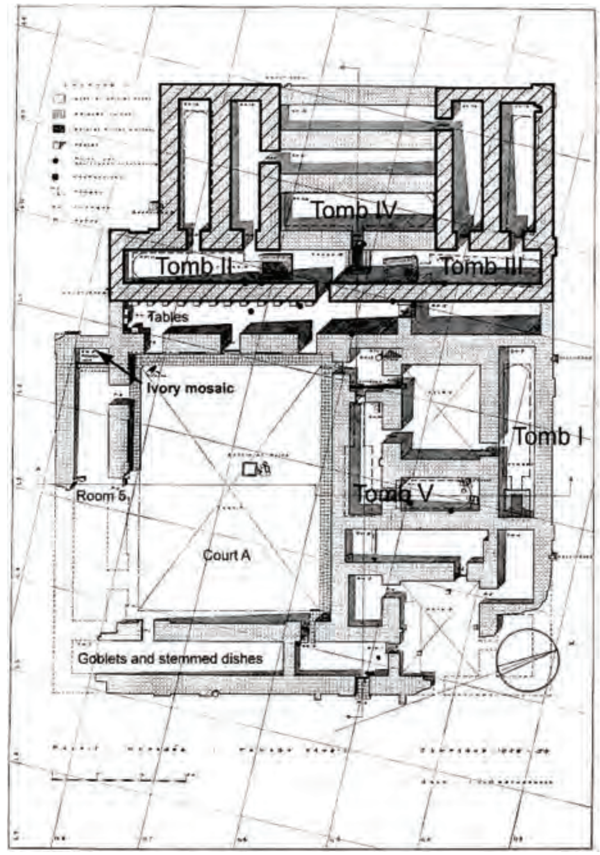

Figure 10.56 Chogha Zanbil, *palais hypogée* (after Carter 2011b: Figure 4).

rich burial evidence from Susa. The variability in human burial practices at Al Untash-Napirisha may reflect the multi-ethnic, international make-up of the Igihalkid dynasty (Potts 2016: 222), an ambitious attempt to

> unify in death – and preserve in memory through ritual meals and related ceremonies – the members of the Elamite elite of diverse origins (including family members from the Elamite highlands and Mesopotamian Kassite princesses who married into the Middle Elamite royal family).
>
> (Carter 2011b: 56)

It is likely that several of the late second millennium BC settlements located on the Susiana plain within 25 km of Al Untash-Napirisha would have provided agricultural and labour support for the new city (Carlson 2014: Figure 2). Finally, Al Untash-Napirisha was installed with an impressive system of drains, wells and basins, probably for channelling excess winter rains through the city, while summer water was brought in from the Karkheh river some 55 km to the northwest by means of a major new canal along the Haft Tepe ridge (Corfù 2006; Mofidi-Nasrabadi 2007; Carlson 2014: Figure 9). The site was destroyed probably by Nebuchadnezzar I, 1125–1104 BC, at the end of the Middle Elamite III Shutrukid dynasty, although there is evidence for some occupation in the 8th and 7th centuries BC and Ghirshman ascribed much of the destruction of the site and looting of its most valued artefacts to the final Elamite campaign of Ashurbanipal in the mid-7th century BC (Chapter 11).

Susa and beyond: Middle Elamite III archaeology

With the ascent to the Elamite throne of Shutruk-Nahhunte (*c.* 1190–1155 BC), and his successors Kutir-Nahhunte (1155–1150 BC) and Shilhak-Inshushinak (1150–1120 BC), the forces of Elam pressed ever more forcefully their claims to kingship over Babylonia, leading to the final collapse of the long-lasting Kassite line and the seizure of the cult statues of Marduk and other deities from Babylon to Susa. The burgeoning power of Elam in the Middle Elamite III phase culminated in Shilhak-Inshushinak's extensive campaign to the north and west of Elam as enumerated in an inscribed stele from Susa, demonstrating the ongoing significance of the trans-Tigridian corridor past Der and the Diyala as the major land route to the northwest (König 1965; Boehmer and Dämmer 1985; Potts 2016: 233–234; Zadok 2018b: 309–315). This period of Elamite history witnessed a further boom in temple construction and reconstruction across Elam and beyond, with new temples and temple rebuilds attested in Khuzestan, Anshan, the Susiana plain and along the Persian Gulf, commissioned by Shutruk-Nahhunte and his successor sons (Potts 2010a, 2016: 225). Many of these buildings have dedicatory inscriptions, more frequently in Elamite than Akkadian (De Graef 2013: 277). At **Bard-e Karegar** east of the Karun river a vast spread of collapsed brickwork includes inscriptions attesting the construction and restoration of temples to the deities Pinigir and Kamul by the Elamite kings Shutruk-Nahhunte and Shilhak-Inshushinak (Moghaddam and Miri 2007: 40).

Famously taken to **Susa** in *c.* 1158 BC by Shutruk-Nahhunte and dedicated to Inshushinak on the Acropole, to be found 3,000 years later by French archaeologists, were many classic Mesopotamian monuments including Kassite *kudurrus* (so-called "boundary stones"), the victory stele of Naram-Sin (2254–2218 BC; Figure 10.12), the stele inscribed with the Law Code of Hammurabi (1792–1750 BC; Figure 10.57), plus fine assorted examples of standing statues and kings' heads in diorite and alabaster, all of which shine as much light on Mesopotamian as on Elamite history and iconography (Harper and Amiet 1992; Potts 2016: 225, Table 7.9). Elamite textual evidence reveals that the cult statue of Marduk was taken from Babylon to Susa at the same time, to be reclaimed by the Babylonian king Nebuchadnezzar I in 1120 BC. Shutruk-Nahhunte also brought to Susa stelae and other monuments from sites in Iran such as Al Untash-Napirisha and Anshan. Garrison (2012: 37) situates this episode of material appropriation within the context of asymmetries of power and display that persisted for millennia through ancient Southwest Asia, also richly attested in textual evidence.

Found in the temple of Ninhursag at Susa was the bronze *sit-shamshi* ("sunrise") sculpture inscribed by Shilhak-Inshushinak and found encased in plaster covering a tomb set into a wall of the temple (Figure 10.58) (Carter *et al.* 1992b: 137–141; Potts 2016: 231–232; Helwing 2018: 135–136; Álvarez-Mon 2020: 328–334). The *sit-shamshi* sculpture is a remarkable item, the only one of its kind from ancient Southwest Asia. The three-dimensional scene comprises two kneeling naked men engaged in handwashing. Objects around them include stepped platforms or altars possibly originally faced with gold or silver, piles of conical shapes, trees, tables and conical pillars. The likeliest interpretation of this extraordinary artefact is that it depicts a ritual cleansing activity by two priests at daybreak prior to the conduct of daily sacrifices and offerings. The inscription reads "I, Shilhak-Inshushinak, son of Shutruk-Nahhunte, beloved servant of Inshushinak, king of Anzan and Susa, enlarger of my kingdom, protector of Elam, sovereign of the land of Elam, I have made a bronze sunrise [*sit-shamshi*]…."

From Susa we have examples of highly decorated baked brick building façades, influenced by Mesopotamian examples such as the Kassite temple of Inana at Uruk, depicting bull-men, date palms and female deities grasping their breasts (Figure 10.59), possibly from a "sacred grove" adjacent to the main temple of Inshushinak (Carter *et al.* 1992b: 141–144; Potts 2016: 232–233; Álvarez-Mon 2020: 338–343). Relief panels carved on a cliff face at **Shekaft-e Salman** near Izeh depicting a royal family and a fire altar and worshipping figures are also believed to be of Middle Elamite III date (Figure 10.60) (De Waele 1981; Stolper 1988; Álvarez-Mon 2018b: 617, 2019: 27–46, 2020: 345–352).

Middle Elamite occupation of the highland regions, such as the Kur river basin, is hard to define but a presence of this period is evident at **Tal-i Malyan** in the EDD large building and associated pottery kilns dating to

Figure 10.57 Susa, excavation of the Law Code stele of Hammurabi in the 1901–1902 season (Harper and Amiet 1992: Figure 45; photo credit: Gustave Jéquier).

Figure 10.58 Susa, *sit-shamshi* sculpture, 12th century BC (SB2743; photo credit: © RMN-Grand Palais, Musée du Louvre/Image RMN-GP).

1300–1000 BC (Figure 10.61) (Carter 1996, 2017; Potts 2016: 240–243; Pincé *et al.* 2019; Álvarez-Mon 2020: 355–356). Some 250 Middle Elamite III tablets were found at Malyan/Anshan, showing a distinctive mixture of Akkadian and Elamite words, phrases, units of measure and dating formulae (Stolper 1984a; Basello 2011; Basello and Giovinazzo 2018: 487–488; Tavernier 2018b). The texts, dating to *c.* 1100 BC, include informative accounts and recipes for metalworking for production of items such as figurines, rosettes and adornments for temple doors and furniture, in total involving more than 300kg of copper/bronze (Helwing 2018: 136). Sheep and goat dominate the faunal remains from this period at Malyan (Zeder 1991). In the Mamasani region of Fars, on the route from Susa to Anshan, there is evidence for an increase in rural settlement in the Middle Elamite period, while the discovery at **Tol-e Spid** of a Middle Elamite brick with inscription of Shilhak-Inshushinak, 1150–1120 BC, suggests a major building phase by this ruler at the site (Potts 1999: 238; McCall 2013b). Middle Elamite or Qaleh-period levels have been excavated at Tol-e Spid and **Tol-e Nurabad**, and regional survey detected 16 Middle Elamite sites preceding an early first millennium BC collapse of settlement (Zeidi *et al.* 2006; Asgari Chaverdi *et al.* 2010).

At some around 1120 BC, the Babylonian king Nebuchadnezzar I (1125–1104 BC) defeated the last Shutrukid king Hutelutush-Inshushinak near the Ulai (Karkheh) river, bringing to an end this remarkable period in the history and archaeology of Elam. Following the dramatic collapse of the Elamite state our evidence for any activity across Elam is lacking for up to 300 years (Potts 2016: 246), "a total Dark Age" within de Miroschedji's (2003: 34; see also Zadok 2018b: 304) cyclical schema of the *longue durée* ebb and flow of Elamite societies.

Elam in the world of Bronze Age Southwest Asia: an ever-revolving door or a profound duality?

In this chapter we have tracked over a period of more than 2,500 years the shifting nature of the lowland-highland relationships between the societies of Mesopotamia and those of Elam, principally as mediated through Khuzestan and as attested in the material evidence from the site of Susa above all. In a nice turn of phrase, Álvarez-Mon

Figure 10.59 Susa, moulded brick relief scene, with inscription of Shilhak-Inshushinak, 12th century BC (SB2732, SB2733; photo credit: © RMN-Grand Palais, Musée du Louvre/Christian Larrieu).

(2020: 499) has commented on "Elam and its strategic position as a revolving door between Mesopotamia and the Iranian plateau." Elam's character and strength were rooted in its ability to draw on the talents and resources of two quite distinct regions of Iran – the lowland plains of Khuzestan and the Zagros highlands to the north and east, characterised by Malbran-Labat (2018: 466) as "the profound duality of the state." At its most powerful, the Elamite state integrated these components into a formidable, internationally renowned force that was respected as a core member of the so-called "Club of the Great Powers" of Late Bronze Age Southwest Asia, including Elam alongside Egypt, Mitanni, Assyria, Babylonia and the Hittites, as explored by Marc Van De Mieroop (2004: 137) whose summary is worth quoting *in extenso*:

> The rulers of the Near Eastern states were fully aware that they all belonged to a common system that encompassed the entire region. This is clear from the way they interacted with each other in diplomatic and military terms. They also shared an ideology about the social structures within their states and the role of the majority of the people living in them. While the political organization of the states varied, they were all characterized by an enormous discrepancy in access to wealth and power between the numerically small elites and the mass of the populations. An international elite class emerged, whose participants had more in common with their colleagues in the other states than with the lower classes at home.

Interactions between the members of the Club of the Great Powers were conducted as much through diplomacy, inter-marriage and trade as through occasional outright warfare (Liverani 2014: 269–377 is a masterful overview of this episode). Inimical to smooth dynastic succession in Elam was the royal succession practice, partially influenced by highland traditions, whereby power might be passed father-son, father-(brother)-son or father-(sister)-son, often generating a "multiplicity of heirs able to claim the throne" (Malbran-Labat 2018: 466) and a highly unstable set of arrangements with predictable consequences.

Figure 10.60 Shekaft-e Salman, relief SSII, 12th century BC (Álvarez-Mon 2020: pl. 142) (image courtesy of Javier Álvarez-Mon).

An extreme manifestation of the Late Bronze Age social stratification whereby the ruling classes sought to distinguish and distance themselves from their people, was the royal foundation or refoundation of new capital or cultic cities, mostly featuring their own names in the new city's title: Al Untash-Napirisha in Elam, Dur-Kurigalzu in Babylonia, Kar Tukulti-Ninurta in Assyria, Per-Ramesse and Akhetaten in Egypt. That these foundations tended not to thrive or even survive long beyond the lifetimes of their founding kings is comment enough on their sustainable appropriateness to the societies within which they were created.

Critical to rulers' attempts to consolidate and sustain their power, in Elam as elsewhere amongst the Great Powers' Club, was the role of religion, with the king determined to be seen as a conduit between his people and their gods. Elamite religion was heavily syncretistic with more than 200 deities textually attested, a diachronic agglomeration of gods and goddesses from Susiana, Mesopotamia, Awan, Anshan, Shimshaki and places beyond (Quintana 2018). The principal deity of Susa, Inshushinak lord of the dead and overseer of law and justice, remained a constant touchstone of religious devotion throughout the Elamite centuries. From the Middle Elamite period onwards, the texts indicate an increasing dominance of highland deities, headed by the divine couple of Napirisha and his consort Kiririsha. Archaeologically, royal Elamite religious devotion is richly attested, as we have seen, through dedicated cultic sites such as Haft Tepe and Chogha Zanbil as well as the hundreds of foundation and dedication inscriptions, above all at Susa, showing the determination of each new king to appease and please the gods through the construction or refurbishment of the residences of the gods, their temples, and the proper fulfilment of the necessary rituals (Malbran-Labat 1995, 2018; Potts 2010a). These massive construction projects must have been a major drain on the human and material resources of the Elamite state, but will also have served to consolidate and enhance elite power through vivid demonstration of royal ability to envisage and execute such grand projects. We should also keep in mind the fundamental role of religion in structuring Elamite "art" more broadly, including the increasing significance of open-air shrines or sanctuaries with their figurative iconography depicting the entwining of the sacred and profane worlds of the Elamite elite (Álvarez-Mon 2020).

As to the nature of Elamite urban settlement, beyond the shadowy outlines provided above regarding such key sites as Susa, Haft Tepe, Chogha Zanbil and Tal-i Malyan, we lack an advanced understanding of the character

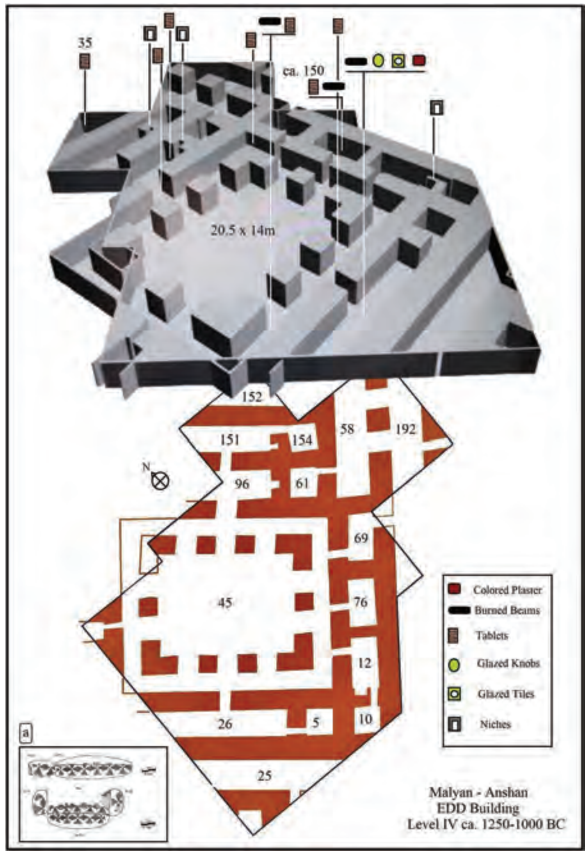

Figure 10.61 Tal-i Malyan, building EDD, level IV, *ca.* 1250–1000 BC (Álvarez-Mon 2020: pl. 144) (image courtesy of Javier Álvarez-Mon).

of Elamite urban settlement, as with all periods of Iran's early history. In a stimulating review, Elnaz Rashidian (2019) proposes that we consider so-called "*dimtu*" settlements, as attested in the Akkadian texts from Nuzi in Upper Mesopotamia, as possible models for approaching Elamite urban settlement. Indeed, Neo-Assyrian texts refer to a number of *dimtu* settlements within the territory of Elam (Kolinski 2001). *Dimtu* settlements were small-scale, semi-independent entities that could work together and with dominant central authorities when political circumstances dictated, fitting rather well with Daniel Potts' (2016: 146) notion of Elam, at least in the late third millennium BC, as essentially a segmentary state composed of loosely fitting socio-political components that could cohere and act together as and when required before reverting to their semi-autonomous status. The geographic distribution of small-scale widely distributed settlements, generally smaller than 2 ha, outside the major urban centres would be more suitable where available settled and arable land was more restricted, as in the Elamite highland zone, as compared to the great plains of Khuzestan and Mesopotamia that could support denser and more intensive urban and rural occupation.

Underpinning these settlement patterns, the economic basis of Elam, as far as we can tell from rather limited evidence, was rooted in cultivation of a range of crops and herding of goat and sheep above all. The notion that the Elamite state at least in the second millennium BC was sustained principally through transhumant pastoralists and their control of access to resources, analogous to Bakhtiari and Qashqa'i nomadic federations of recent times (Alizadeh 2010), has been effectively critiqued as anachronistic by Potts (2014: 34–35; Arbuckle and Hammer 2019). By some way the most important, arguably the only, archaeological and anthropological study of the food economy of a major settlement of the Elamite state is Melinda Zeder's (1991) diachronic analysis of faunal remains from Tal-i Malyan, integrated with the archaeobotanical work of Naomi Miller (Miller 1982; Miller and Smart 1984). These studies show that during the Kaftari phase at Malyan, *c.* 2200–1600 BC, greater tracts of surrounding land were brought under cultivation of crops such as wheat and two-row barley for human and animal consumption, with outlying pastures controlled by satellite villages. Animal herding, foddering and consumption in the Kaftari phase were focused on goat and sheep with an increased use of cattle, indicative of a "centralized urban system" (Zeder 1991: 206) with some possible input from pastoral nomadic elements. In the Qaleh phase, *c.* 1600–1100 BC, by contrast, Zeder (1991: 239) sees a resurgence of pastoralist input into meat consumption at Malyan, buffered by a more centralised control over the production and consumption of beef. Zeder's brilliant study brings into sharp relief the otherwise parlous state of our knowledge and understanding of food production and consumption across the span of ancient Elam.

Towards the end of the 12th century BC the Elamite state came to a shuddering halt, its last Shutrukid king defeated in battle by the Babylonian king Nebuchadnezzar I. We can view this episode of collapse and the subsequent centuries of darkness within the broader context of transregional collapse across much of the Late Bronze Age eastern Mediterranean and the associated disintegration of the Club of the Great Powers. Across the Aegean, Anatolia, and the coastal plains of Syria and the Levant there is widespread evidence for major disruption including the collapse of once mighty empires such as the Hittites, and the appearance of the still mysterious Sea Peoples. But initial disruption was largely restricted to regions of Southwest Asia west of the Euphrates river, with more gradual impact on Assyria, Babylonia and Elam. Alongside the fall of Elam, other regions of Iran were undergoing episodes of severe challenge in the Late Bronze Age-Early Iron Age transition, as we have seen in preceding chapters, with significant evidence for adverse climate underpinning major reorientations of settlement patterns, including regional abandonments across almost all of Iran. In the following chapter we pursue these developments across and through that transition, in the process illuminating the ways and means by which Iranian societies once more adapted to, and continued to shape, the ever-changing environmental and socio-political circumstances through which they lived.

11 Iran imperial: villages, cities, states and empires of the Iron Age, 1250–330 BC

From village to empire in the age of iron

In this extended chapter we review and interrogate the archaeological evidence from the broad spectrum of human societies that existed in Iran during the millennium of the Iron Age from *c.* 1250 BC. As we discussed in earlier chapters, people were living in villages across Iran with their domesticated crops and animals for millennia prior to the Iron Age, and the majority of people in Iran continued to live in this way even as the evidence accumulates through the first millennium BC for ever-increasing levels of inequality and social stratification, culminating in the rise to dominance of the socio-political structures of globally significant imperial powers by the mid-first millennium BC. We have an impressive array of topics to cover in this chapter, as summarised and visualised in Figure 11.1.

One of the challenges in the system of nomenclature for the past of Iran, and not just Iran, lies in our use of the term "Iron Age" for the thousand-year span starting at *c.* 1250 BC. The fact is that for much of this period bronze, as an alloy of tin and copper, remained a dominant metal for the production of tools, weapons and items of adornment, even as enhanced iron-working technologies were developed through the first millennium BC (Oudbashi 2019). Only by the mid-first millennium BC in areas where iron was relatively accessible did iron supplant bronze as the main material for tools and weapons, at the same time freeing bronze to enjoy an enhanced role within the decorative arts (Moorey 1982, 1988; Helwing 2018). On the other hand, there is significant evidence for early production and use of iron objects at sites such as Qoli Darvish on the central plateau by *c.* 1500 BC (Sarlak and Hessari 2018). The use of iron demands a major increase in resources including labour in order to mass produce iron objects, as each artefact has to be hand-forged in contrast to the multiple castings rapidly achievable in copper or bronze. A sustainable iron industry thus requires a highly organised and efficient system of production, including skilled labour as well as ready access to raw materials including fuel. The often-feuding states and empires of the Iron Age of Iran and beyond, including Urartu, Media, Elam, Assyria, Babylonia and the Achaemenids, provided a context of recurrent inter-state warfare within which such technological and organisational developments were encouraged to take place.

Iran in the age of Iranian migrations

We commence this section on a contentious issue with some wise words from a seasoned scholar of ancient Iran:

> In the context of a renewed fashion of relating archaeology, culture, and language it is well to remember that neither sherds nor genes are destined to speak specific languages, nor does a given language require a specific ceramic type or genetic structure.
>
> (Lamberg-Karlovsky 2002: 75)

A vexed topic in studying the past of Iran is the so-called "Iranisation" of Iran, that is the processes by which the land of Iran became inhabited, at least in part, by speakers of Iranian languages. This question has occupied scholars for decades and today involves the fields of linguistics, history and genetics as well as archaeology, which is where our focus will be. In addressing this topic, we are concerned with complex issues of identity and the shifting interplays between language, ethnicity and culture, encapsulated in the quote above from Karl Lamberg-Karlovsky. Our viewpoint is that all peoples who have inhabited the land of Iran, as defined today, and regarded it as their home, from earliest prehistory up to today, can rightly and reasonably call themselves

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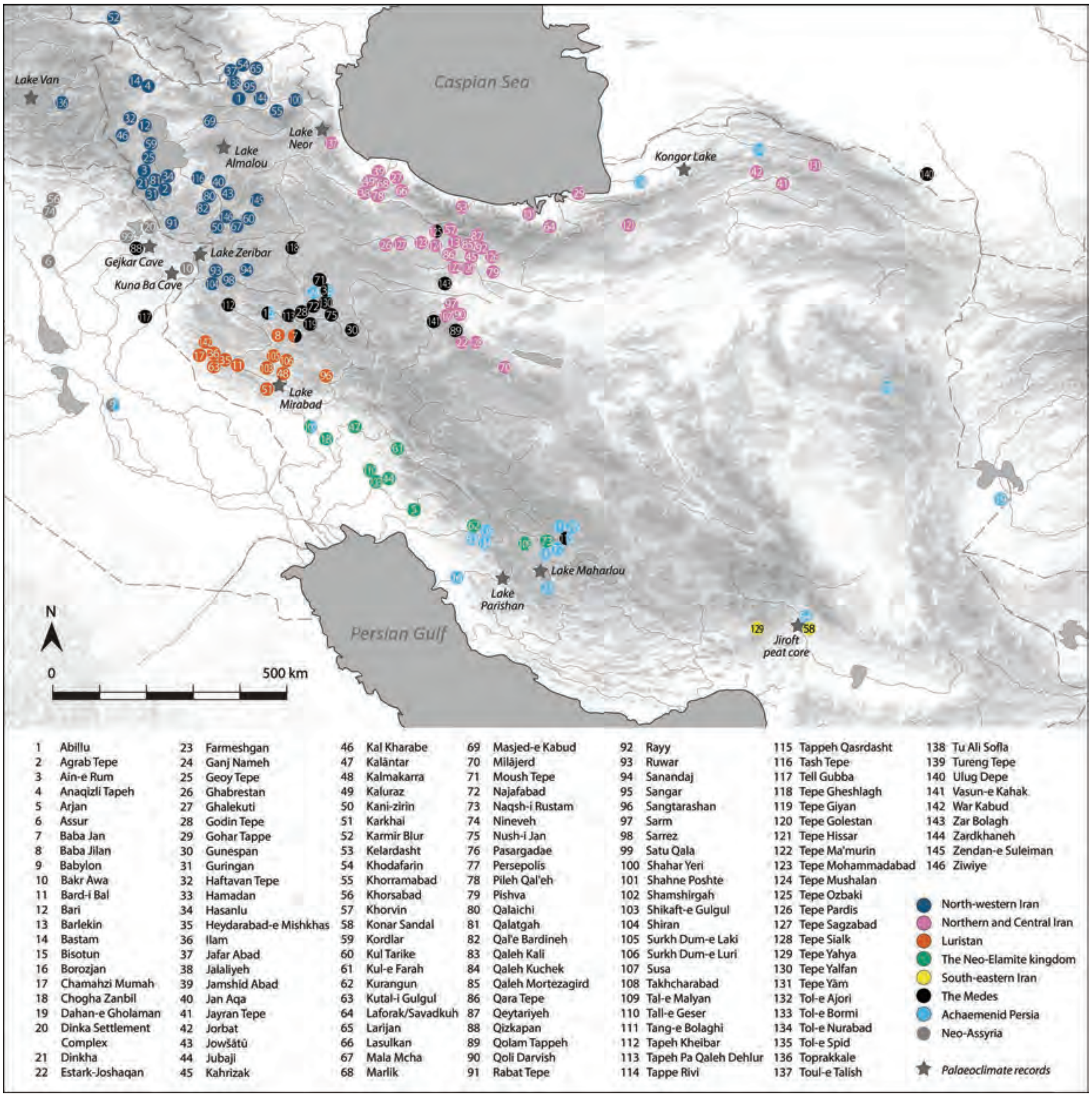


Figure 11.1 Map of Iran to show major Iron Age sites and palaeoclimate record locations.

"Iranians" or be so designated, while accepting that a linguistic definition of "Iranian" must be more restricted in its inclusivity. But we should also heed Witzel's (2013: 425–426; Kohl 2007: 234) cautionary words:

> the simplistic linkage of archaeological cultures with languages is just as dangerous as that with genes and ethnicities…Without written sources we cannot be certain whether a particular archaeological culture was mono- or multilingual, or whether a certain language or its dialects were spoken in several adjacent archaeological cultures.

It is important to appreciate that Iranian-speaking peoples were widely distributed through the Iron Age across Southwest, South and Central Asia in regions well beyond Iran, from Romania in Europe to the west to Xinjiang in China to the east, and south to the shores of the Persian Gulf and the Indian Ocean (Witzel 2013: 423). The Iranians of Iran need to be viewed within this broad geographic context, as important components of transregional cultural connectivity spanning the Mediterranean to South and Central Asia (Kohl 2007).

A focus on pan-Iranian migrationist interpretations of the Late Bronze Age–Early Iron Age transition in Iran has not served Iranian archaeology well, arguably encouraging devotion of much time, effort and thought into the pursuit of academic dead ends. We cannot do better than quote *in extenso* the lucid, even acerbic, comments of Danti and Cifarelli (2015: 64) regarding the Late Bronze Age-Early Iron Age transition and its putative significance for the migration of Iranians into and across Iran:

> While time has shown this would-be pan-Iranian chronological distinction proffers little by way of heuristic, historical, or archaeological relevance, as it fails to temporally bracket regional archaeological assemblages and horizons and requires constant local and global chronological revisions and qualifications, we are still dealing with the paradigmatic aftershocks. This model has been left in place out of inertia, for convenience, or, as one may argue, because it was inextricably linked to promoting a sense of Iranian nationalism. The ripple effects include the defense of the concomitant migrationist theories, which has distracted a generation of scholars from a normative research process predicated on the full and timely presentation of primary data. Instead, much time and energy were spent on the highly selective presentation of data to patch increasingly threadbare theoretical concepts and constructs.

With this damning critique in mind, we pick our way cautiously through the issues in the ensuing paragraphs.

The first historical mentions of Iranian languages and peoples occur in Neo-Assyrian cuneiform sources, from 879 BC onwards, which attest the campaigns of Assyrian kings including Shalmaneser III, Tiglath-Pileser III and Sargon II against Iranian peoples including Median tribes in the Zagros highlands to the east of the Assyrian homeland (Witzel 2013: 435; Potts 2016: 264–265). Other Neo-Assyrian documents make it clear, however, that the populations of the Zagros at that time were highly mixed, with identifiable Iranian and Persian elements in the minority (Potts 2014: 60). Assyrian and Urartian texts indicate the presence of Iranians, Kassites, Hurro-Urartians, Mannaeans and other local populations across north-western and western Iran by the 9th century BC (Postgate 1989; Zadok 2002; Danti 2013b: 352). The designation "Parsua" in Assyrian and Urartian texts, relating to a socio-political coalition of rulers, is especially intriguing and has been taken to refer to early Iranian settlement of the Urmia basin or the central Zagros region (Zimansky 1990; Atayi and Roaf 2019).

Prior to this time, Indo-Aryan words, personal names and deities occur in Mitanni cuneiform texts in Upper Mesopotamia around 1400 BC, with an emphasis on horses and horse racing (Starke 1995) while, beyond the eastern end of Iran, Indo-Aryan populations interacted with communities of the Bactria-Margiana Archaeological Complex (BMAC) of southern Turkmenistan and northern Afghanistan in the late third and early second millennia BC (Chapter 9; Hiebert and Lamberg-Karlovsky 1992; Lamberg-Karlovsky 2002; Witzel 2013: 431). The movement of Iranian-speaking peoples to the south and into Iran occurred only after these Indo-Aryan migrations, at *c.* 1000 BC, and can more firmly be associated with the use of iron and the replacement of Bronze Age chariots with horseback riding at the start of the Iron Age (Anthony 2007).

Horse management and horseback riding have been recurrently connected with the origins and early diffusion of Iranian-speaking peoples (Burney 1999; Kelekna 2009). The development of horse riding both granted significant military advantage and facilitated rapid mass population movements, military or otherwise. In his review of archaeological and historical evidence for the horse in early Iran and adjacent regions, Potts (2014: 47–58) traces the appearance of the horse in faunal remains from Iranian sites dating from the fifth millennium BC onwards and in Mesopotamian texts from the mid-later third millennium BC onwards. Of particular importance are the horse and other equid remains from Tepe Sagzabad on the Qazvin plain, of Iron Age I date (*c.* 1265–1025 BC; Mashkour *et al.* 1999; Mashkour 2002), horse burials of similar or later date from the cemetery sites of Marlik and Kaluraz in Gilan (Piller 2008) and from Pardis on the Tehran plain (Fazeli *et al.* 2007), horses, often with dogs, accompanying kurgan-style burials in the Khodafarin region of north-western Iran (Iravani Ghadim and Beikzadeh 2018; Kiani *et al.* 2018) and a range of domesticated equids from Iron Age levels at Haftavan northwest of Lake Urmia (Mashkour and Mohaseb 2017). Horse burials have also been excavated at Godin Tepe (Young 1968: 160), Hasanlu and Baba Jan (Goff 1969: 123). The tradition of ritual burial of horses has been traced from the Eurasian steppes via the Caucasus into Iran from the north by the late second millennium BC (Kuz′mina 2007). As Potts points out (2014: 58; Balatti 2017: 283), however, horse breeding and husbandry in the Zagros region of western Iran are attested archaeologically and in Mesopotamian texts significantly before the Early Iron Age and we therefore need to be careful in making a strict association between the arrival in Iran of Iranian-speaking peoples and an increased representation of the horse. Apart from the equine aspect, then, what do archaeology and related disciplines tell us about the arrival across Iran of Iranian-speaking peoples from the later second millennium BC onwards?

Genetic studies continue to strive for a broadly accepted interpretation of Iranian origins and dispersal (Quintana-Murci *et al.* 2004; Underhill *et al.* 2010; Witzel 2013: 427). Ancient DNA results have been argued to suggest a homeland in "present-day Iran or Armenia" for the first speakers of an Indo-European language (Reich 2018: 120), an argument that rules out the need for significant migration into Iran of Iranian-speaking peoples, as it proposes that they or their ancestors were already there, or nearby, possibly as far back as 4000 BC. This argument is difficult to tally with the archaeological evidence for considerable population mobility around 1000 BC, and with the historical evidence that lacks any occurrence of Indo-Aryan names prior to 1400 BC in Mesopotamian texts, or prior to 1650 BC in the case of the Indo-European languages of Hittite Anatolia (Watkins 2008). The genetic and linguistic evidence more likely indicates that incoming Indo-European languages were adopted by some elements of already ancient populations in Iran at some time around 1000 BC (Mehrjoo *et al.* 2019).

In terms of archaeological evidence, there have been many attempts to track the migration of Iranian speakers across Iran through surviving material culture, above all ceramics and burial of the dead in discrete cemeteries (Ghirshman 1954a: 60–63, 73–76; Henkelman 2012: 934). Building on Ghirshman's ideas, Cuyler Young (1965, 1967) associated the westwards spread of grey-ware ceramics in the Early Iron Age with the movement of Iranian tribes into and across northern Iran, an interpretation that has not been widely accepted. Piller (2003–2004, 2004; Mousavi 2005b) prefers to see a local development of the grey wares out of Bronze Age ceramic traditions of northern Iran, congruent with Danti's (2013b) view of significant local, indigenous cultural development in north-western Iran through the second and early first millennia BC. Excavations at Tepe Sialk levels V-VII, as well as increasing numbers of radiocarbon dates from several sites, support the idea of a local development of grey-ware ceramics from the Bronze Age into the Iron Age (Fahimi 2013, 2019; Hoseinzadeh *et al.* 2019). Others have explored possible connections between climate change and Iranian migration, with episodes of coolness and aridity stimulating mass migrations from the steppic zone into Iran to the south (Kuz'mina 2000; Makhortykh 2004). Also to be considered is the issue of the origins of Zoroastrianism and the question of the geographical setting of the *Avesta*, the compilation of Zoroastrian holy books, an area where opinions are widely divergent (Skjærvø 1995, 2013; Potts 2014: 62–66). It is likeliest that the material culture and social developments attested in the Early Iron Age result from a combination of local development and migration into Iran of new peoples.

Linguistic analyses indicate connections between early Iranian and the languages of south Russia, the Urals and west Siberia, including a shared faunal and floral vocabulary that depicts an Indo-European homeland in a temperate zone with cold winters, characteristic of the steppic regions of Central Asia (Witzel 2001, 2013). Linguistically speaking, the Medes and Persians formed a western Iranian group while eastern Iranian languages characterised the regions of Afghanistan, the Pamirs and Sogdiana (Witzel 2013: 423). It seems that western and eastern Iranian groups both passed through the BMAC regions of southern Turkmenistan before arriving in Iran and going their separate ways. It remains unclear as to the nature of interactions between incoming Iranian-speaking peoples and pre-existing local populations but there is significant evidence that even after the Iranian migrations into Iran the country still hosted a rich ethnic and linguistic diversity, as it continues to do today (Zadok 2002, 2018a; Witzel 2013: 433; Mehrjoo *et al.* 2019). In south-western Iran and the southern Zagros region Elamite peoples continued to thrive, while further north across the Zagros successors of the Guti, Lullubi and Hurrian-related populations of Mitanni and Urartu were also present, as attested in the textual evidence.

Doubtless future investigations incorporating new archaeological, historical, linguistic and genetic evidence will continue to tangle with the issue of the populations and populating of Iran in these critical centuries. For now let us allow the last word to one of the most significant contributors to the debate, Cuyler Young (1967: 34):

> One point is clear: the centuries from 1300 to 550 B.C. witnessed events in western Iran of such complexity that the available data must sometimes be strained beyond what they perhaps can bear in any attempt to create a coherent explanation of those events.

A climate of collapse and a climate of empire

A major episode of increased aridity and cold is attested in multiple palaeoclimate records of Southwest Asia, spanning 1200–900 BC, the Late Bronze Age-Early Iron Age transition. This episode was marked by a drop of up to 5°C in mean annual temperatures and a decrease of 40% in winter precipitation (Kaniewski *et al.* 2019). As we illustrate throughout this chapter, this episode of cold, dry weather across Iran, and well beyond, appears to have had a major negative impact on the ability of Iranian villagers, herders and farmers to pursue their agricultural activities at the levels they had become accustomed to during the warm, wet climatic optimum of the Late Bronze Age, swiftly resulting in extensive settlement abandonment across almost all of Iran with the exception of its north-western reaches. From *c.* 900 BC temperature and rainfall steadily recovered towards pre-1200 BC levels (Fallah *et al.* 2017), providing once more a climate and environment conducive to human settlement and the pursuit of intensive farming and stock-keeping. It was on these environmental and agricultural foundations that the great Iron Age empires of Iran and Southwest Asia were constructed.

Neumann and Parpola's (1987) analysis of 2,000 cuneiform letters from the Nineveh archives of the Neo-Assyrian empire proposed correlations between episodes of extreme dryness, as attested in the Lake Van isotopic record, with Assyrian textual references to drought, famine and political unrest, while the maximum extent of Assyrian imperial reach coincided with a wetter phase that enabled higher crop yields and subsequent greater political stability and territorial expansion (Rosenzweig 2016). High-resolution speleothem evidence from Kuna Ba Cave in eastern Iraq reinforces this narrative (Figure 11.2) (Sinha *et al.* 2019), attesting an anomalously wet period across the region of up to 200 years from *c.* 925 BC, which enabled a spread and intensification of rain-fed and irrigated agriculture, and coincided with the major phase of Assyrian imperial expansion. This "Assyrian megapluvial" episode was followed by a 125-year period of severe aridity from *c.* 725 BC leading to an "Assyrian megadrought," synchronous with the collapse of the Assyrian empire in the later seventh century BC. The magnitude of this Iron Age drought is matched in the historical and palaeoclimate records only by the post AD 1980 drought afflicting the modern Middle East and also attested in speleothem records from the region (Flohr *et al.* 2017; Sinha *et al.* 2019).

At the height of the Iron Age there are clear environmental impacts of imperial control and agricultural intensification across Iran. The Lake Zeribar core zones 7b and 7c show an increase in *Plantago lanceolata*-type pollen, an indicator of pasturelands and anthropogenic disturbance that can arguably be associated with Neo-Assyrian and/or Achaemenid exploitation of this region of western Iran (van Zeist and Bottema 1977: 75). Survey of the Marivan plain, in the middle of which sits Lake Zeribar, has identified an increase in settlement during the Iron Age III period, preceding and during its incorporation into the Achaemenid state (Dadaneh and Qasrian 2019). This picture is supported by palaeoclimate data from Lake Mirabad (van Zeist and Bottema 1977; Stevens *et al.* 2006) and Lake Almalou, east of Lake Urmia (Figure 11.2) (Djamali *et al.* 2009a; Andam *et al.* 2020: Figure 5). The evidence from Lake Maharlou in Fars (Djamali *et al.* 2009b; Andam *et al.* 2020) includes a major increase in microcharcoal, at 750–500 BC, possibly from the deliberate burning of woodland to create pasture, orchards

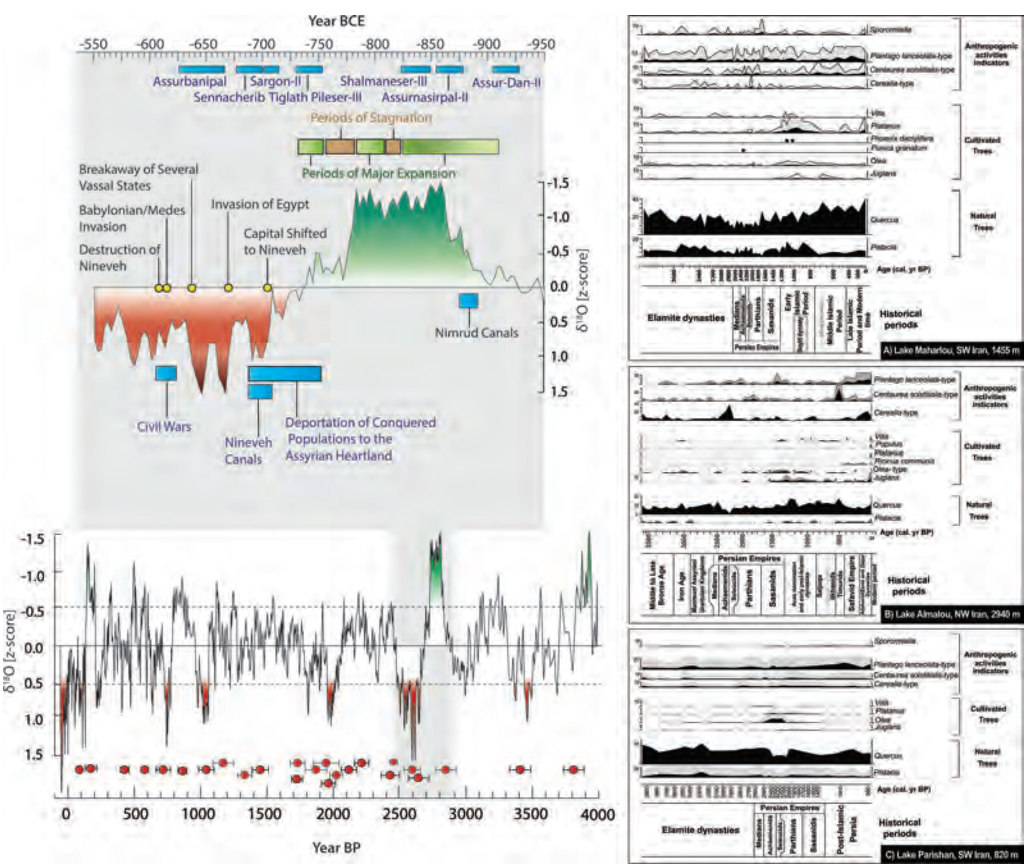


Figure 11.2 Left: Iron Age climate change attested in Kuna Ba cave speleothem (Sinha *et al.* 2019: Figure 3) (image courtesy of Ashish Sinha). Right: summarised pollen diagram of Lake Maharlou, Lake Almalou and Lake Parishan (Andam *et al.* 2020: Figure 5) (image courtesy of Sara Andam).

and managed woodlands of walnut, pistachio and plane. Core evidence from Lake Parishan tells a similar story, indicating the use of fire to clear land for pasture and cultivation, including of olives, from *c.* 500 BC (Jones *et al.* 2015; Djamali *et al.* 2016; Balatti 2017: 308–315). In south-eastern Iran, the evidence from a peat core at Jiroft shows a period of intensive cereal cultivation, grasslands expansion and desert retreat commencing at *c.* 800 BC and continuing through the lifespan of the Achaemenid empire (Gurjazkaite *et al.* 2018: 153). Finally, core evidence from Kongor Lake at the eastern edge of the Gorgan plain in north-eastern Iran also provides a picture of increasingly moist conditions from *c.* 800 BC, enabling intensification of cereal agriculture, deliberate clearance of Hyrcanian forest and cultivation of fruit and nut trees, supporting significant human settlement after a major hiatus in the Bronze Age-Iron Age transition (Shumilovskikh *et al.* 2016).

Neo-Assyrian and Achaemenid imperial expansions would have had major environmental impacts, including through extensive irrigation projects, the spread of rural settlement, native forest clearance, an increase in intensive agricultural production and changes in crop regimes such as the widespread use of lentils from *c.* 900 BC (Riehl 2009): "the farmer was as much a herald of Assyria's territorial claims as the soldier in this period" (Rosenzweig 2016: 53). All these intensive activities could accelerate soil salinity, erosion and exhaustion (Rosenzweig 2016: 55), thus leading to instability and collapse, particularly in the context of unpredictable episodes of severe drought and associated high levels of atmospheric dust as attested at *c.* 800 BC, 500 BC and 300 BC, arguably correlated with imperial downturns (Figure 11.3) (Sharifi *et al.* 2015: Figure 9).

Imperial studies

In the concluding sections of this chapter, we consider the archaeological evidence from the largest socio-political entity that had existed in Iran, and indeed in the entire world, up to that point: the Achaemenid Persian empire. What are the special challenges in dealing with the evidence from a polity of such an expansive and diverse geographical reach as the Achaemenid empire? How can archaeologists best study ancient empires as archaeological phenomena, taking into account but not being blinded or bound by the historical evidence where we have it, especially where much of that evidence originates from sources essentially hostile or alien to the empire in question?

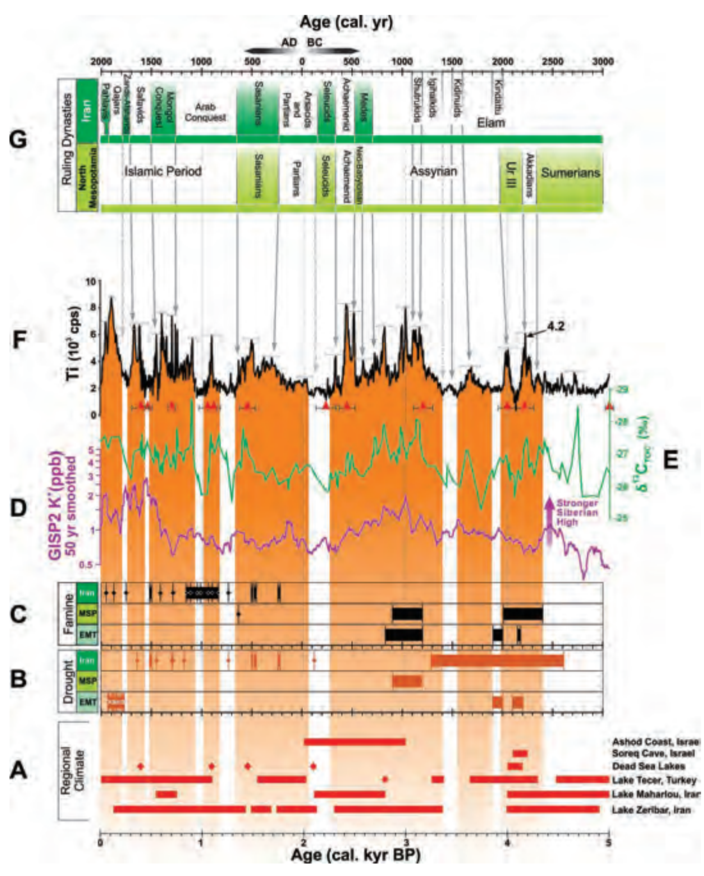


Figure 11.3 Periods of enhanced atmospheric dust, correlated with socio-political episodes in Iran and Upper Mesopotamia (Sharifi *et al.* 2015: Figure 9) (image courtesy of Arash Sharifi). A: episodes of dry conditions. B: Drought records from Iran. C: Historical records of famine events. Orange areas denote major episodes of dust deposition. Grey arrows denote power transitions.

Building on earlier work by Sinopoli (1994), Alcock *et al.* (2001), Smith and Montiel (2001), Matthews (2003a: 127–154), Turchin (2009), Liverani (2017) and others, Claudia Glatz (2009, 2020) has promulgated an explicitly archaeological approach to ancient empires in her study of the Hittite empire and its material interactions across Late Bronze Age Anatolia. Eschewing conventional top-down conceptualisations of empire, shaped above all by elite-origin archaeological and historical evidence, Glatz formulates an agenda for empire studies whereby

> Empire is both a relationship and a process that underlie recurring episodes of individual and collective interaction on a multitude of socio-political and cultural levels. Material culture – from pottery to monumental architecture – is formed by, expresses and mediates these relationships and articulates the spectrum of possible modes of engagement. An archaeology of imperial relationships is, thus, the investigation of overlapping spatial and temporal patterns of material categories that are diagnostic of inter-regional interaction.
>
> (Glatz 2009: 127)

While Glatz herself has pioneered the application of such a methodology to the study of the Hittite empire, it is fair to state that explicitly archaeological approaches to the Achaemenid empire, that might pursue and integrate investigations of all surviving material attributes of core and provincial regions, and their interactions, as attested in forms such as settlement patterns, architecture, ceramics, metalwork, glyptic plus environmental, archaeobotanical and zooarchaeological assemblages, still have some way to go even if early steps are underway.

Because of the scale of their reach, power and ambition, empires have a special ability to generate impacts on entire landscapes, in the sense of "a socially constituted set of interlinked places" (Smith 1999: 45). Wittingly or not, empires act as "ecosystem engineers" with potentially transformative impacts on landscapes and everything and everyone dwelling therein (Morrison 2018). As Adam Smith articulates, "It is impossible to describe regimes independent of the spatial order they created: the regions they united, the cities they built, or the architectural monuments they raised." We should then expect to be able to investigate the appurtenances of imperial power in Iron Age Iran through their surviving material remains in all their forms, subject as always to modes and methods of archaeological investigation, analysis and publication. In an inspiring study of impacts of Urartian expansion in southern Transcaucasia, Smith (1999: 51) foregrounds the "architectonics of inequality" demonstrating how settlement patterns in the region during the Urartian imperial period in the 8th century BC indicate a more direct and controlling presence across the plains and uplands of the region. Liverani (1979, 2017) characterises such imperial behaviour as "provincialisation," an "ideological project [that] transformed members of conquered populations from defiant captives into participating members of the empire" in Melissa Rosenzweig's words (2016: 49). How might the Achaemenid evidence inform us in this regard?

Critical in the endeavour to execute a bottom-up archaeological approach to empire is the need to excavate non-elite sites and dwellings in order to generate evidence for how ruled peoples lived. In a stimulating study of Urartian archaeology, Paul Zimansky (1995) demonstrated how the focus of research on hilltop, fortified, elite sites constructed a picture of cultural homogeneity across the Urartian world, illustrating how

> a relatively small ruling group can constitute an overwhelming archaeological presence in an empire populated by peoples of different and longstanding cultural traditions. When the authority structure that sustains the imperial assemblage disappears, the active use and production of the assemblage is instantly suspended … leaving an almost imperceptible cultural legacy….It is time to excavate habitation sites in various parts of the empire to see how diverse or uniform it really was
>
> (Zimansky 1995: 111)

a clarion call to action that has rarely been heeded since. We return to these issues later in the chapter. For now, we turn to examine Iron Age developments in the upland regions of north-western Iran.

North-western Iran in the Iron Age, 1250–550 BC

Iron Age I, 1250–1050 BC: ongoing local evolution

We saw in Chapter 8 how the Late Bronze Age societies of north-western Iran, as attested at key sites such as Hasanlu and Haftavan, appear to have evolved seamlessly from their Middle Bronze Age ancestors with little evidence for dramatic change through the mid-late second millennium BC, while maintaining a significant degree of regionalisation in their cultural attributes such as ceramics and modes of human burial (Burney 1994; Çevik 2007; Danti 2013b; Guarducci 2019). With the onset at *c.* 1250 BC of the Iron Age, a convenient term that belies the extreme lack of actual iron from sites of this period (the Iron Age I period IVc at Hasanlu, for example, includes only two small iron rings: Pigott 1989), we see a continuation of these gradual developments in this region

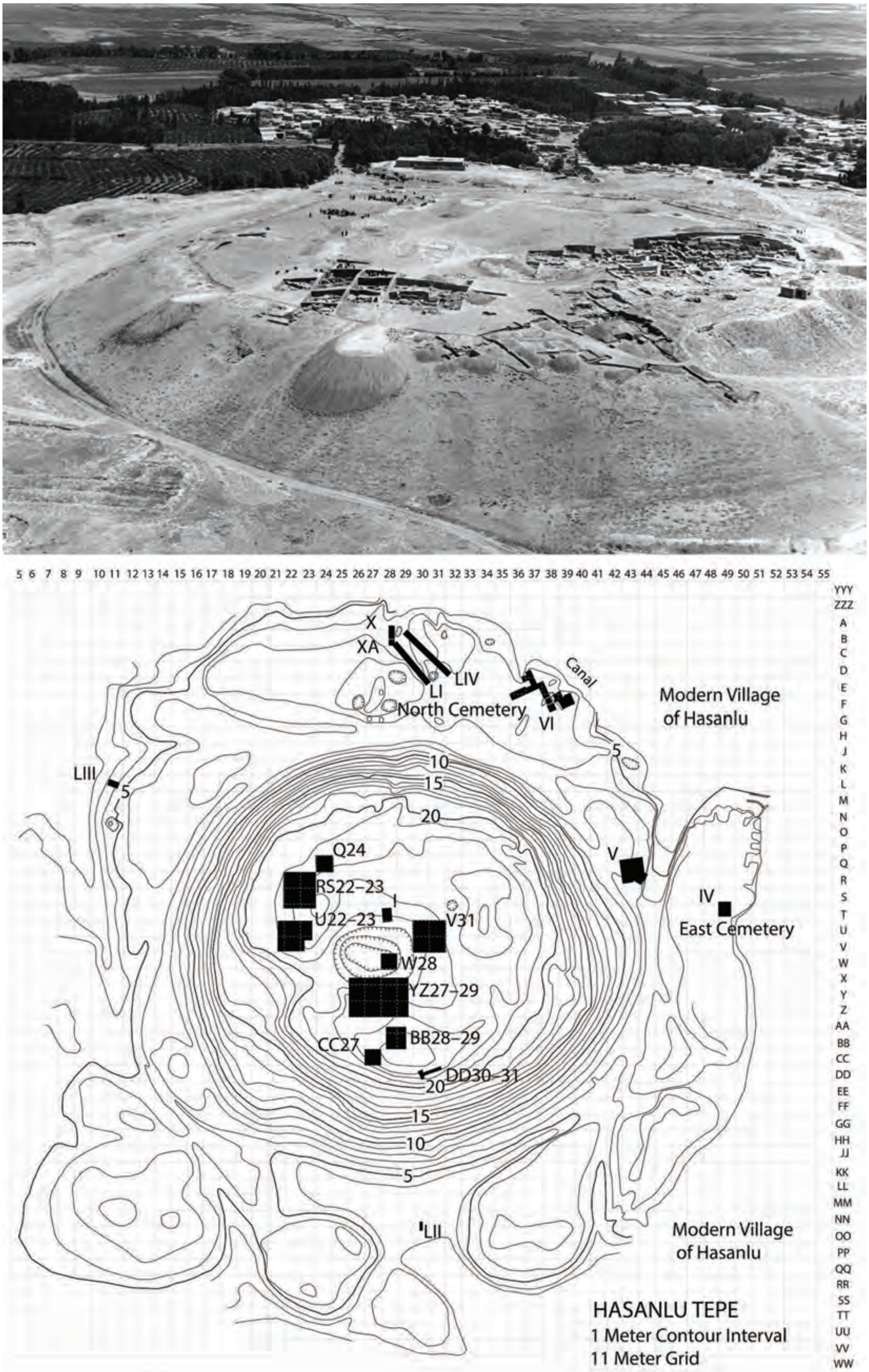


Figure 11.4 Hasanlu, aerial photograph and contour plan with excavated areas indicated (Cifarelli 2019: Figure 1; Danti 2013a: Figure 1.4) (images courtesy of Michael Danti).

with the growth of fortified elite centres at strategic locations in the landscape and with access to good stretches of arable land (Kroll 2005b; Hassanzadeh and Curtis 2018). It is likely that much of the region's population lived in small villages along the valleys with some engagement of people and their flocks in vertical transhumance according to seasonal pasture availability. The classic site of Iron Age I is **Hasanlu**, period IVc, which comprised a fortified citadel of some 2–3 ha (Figure 11.4) (Dyson 1977b, 1989; Cifarelli 2019). After destruction by fire at *c.* 1050 BC of Hasanlu's citadel and the settlement on its Low Mound, the Hasanlu citadel was rebuilt to a similar plan, as also happened at **Kordlar** further to the north where there is more serious evidence of regional conflict in the form of human victims and arrowheads amongst the burnt debris (Lippert 1976, 1977; Danti 2013b: 347). Faunal remains from Kordlar evince a strong reliance on sheep, with cattle and goat. Human burial practices, as attested at Hasanlu, Dinkha and Geoy, show continuity from the Late Bronze Age with deposition of ceramic vessels, many of which imitate metal forms, as well as beads and metal artefacts. There are increasingly adorned burials of children, possibly indicative of their ascribed social status.

The Hasanlu IVc citadel plan (Figure 11.5) includes a series of grand buildings designated by Dyson as BB (Burned Building). Dominant amongst them is BBII, interpreted by Dyson and Voigt (2003: 221) as a temple. We discuss this major building in more detail below as we have more evidence regarding its function from the successive level, Hasanlu IVb. To the north and northeast of BBII in period IVc there are large columned halls arranged loosely around an open central space, but few artefacts were recovered from these buildings to aid us with their interpretation. The columned halls are likely to have served as elite residences, with less elite elements of society residing on the Low Mound and in surrounding villages.

Rich evidence for cultural connections across north-western Iran, Azerbaijan, Armenia and eastern Turkey is found in sites with mounded kurgan burials, spanning Late Bronze Age to Early Iron Age and containing grave goods in the form of weapons, jewellery and vessels. Located close to agate sources, **Zardkhaneh** fortress near Ahar city in eastern Azerbaijan province includes an impressive multi-roomed stone-built structure plus associated kurgan burials with rich grave goods, including metal objects, jewellery and ceramics (Figures 11.6–11.8; see also Chapter 8) (Kazempour *et al.* 2017). Many of these tombs also include horse, goat, cow or dog skulls or skeletons (Gahramani 2017; Iravani Ghadim and Beikzadeh 2018). Key excavated sites of this type in Iran include

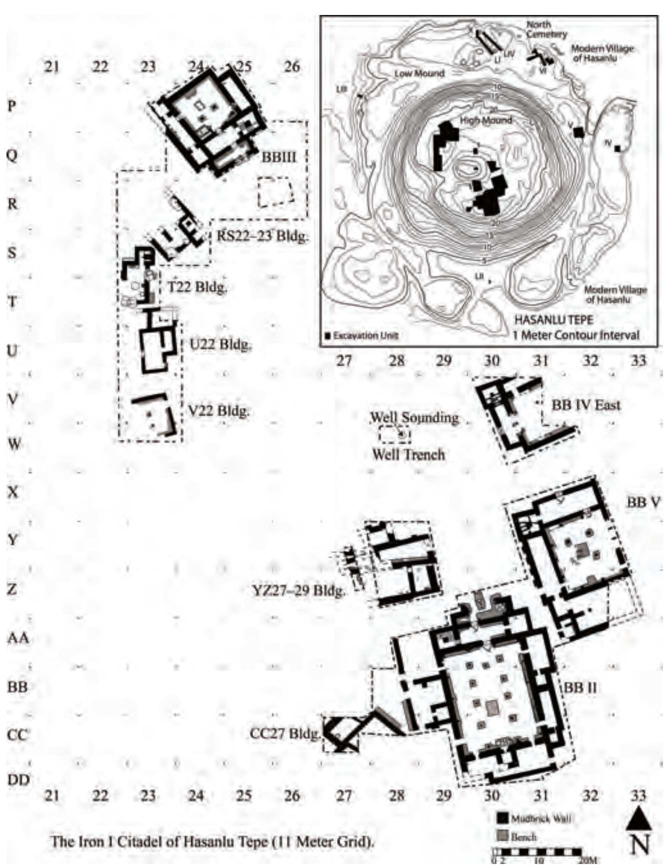


Figure 11.5 Hasanlu, citadel period IVc, 1250–1050 BC (Danti 2013a: Figure 1.5) (image courtesy of Michael Danti).

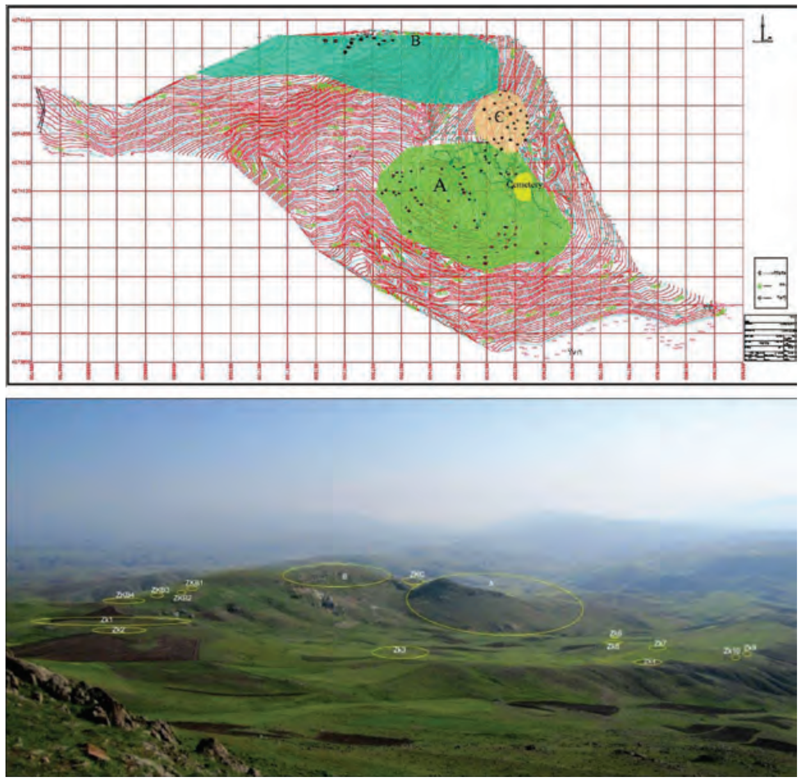


Figure 11.6 Zardkhaneh, view and plan of citadel and associated cemetery sites (Kazempour *et al.* 2017: Figures 2–3) (images courtesy of Mehdi Kazempour).

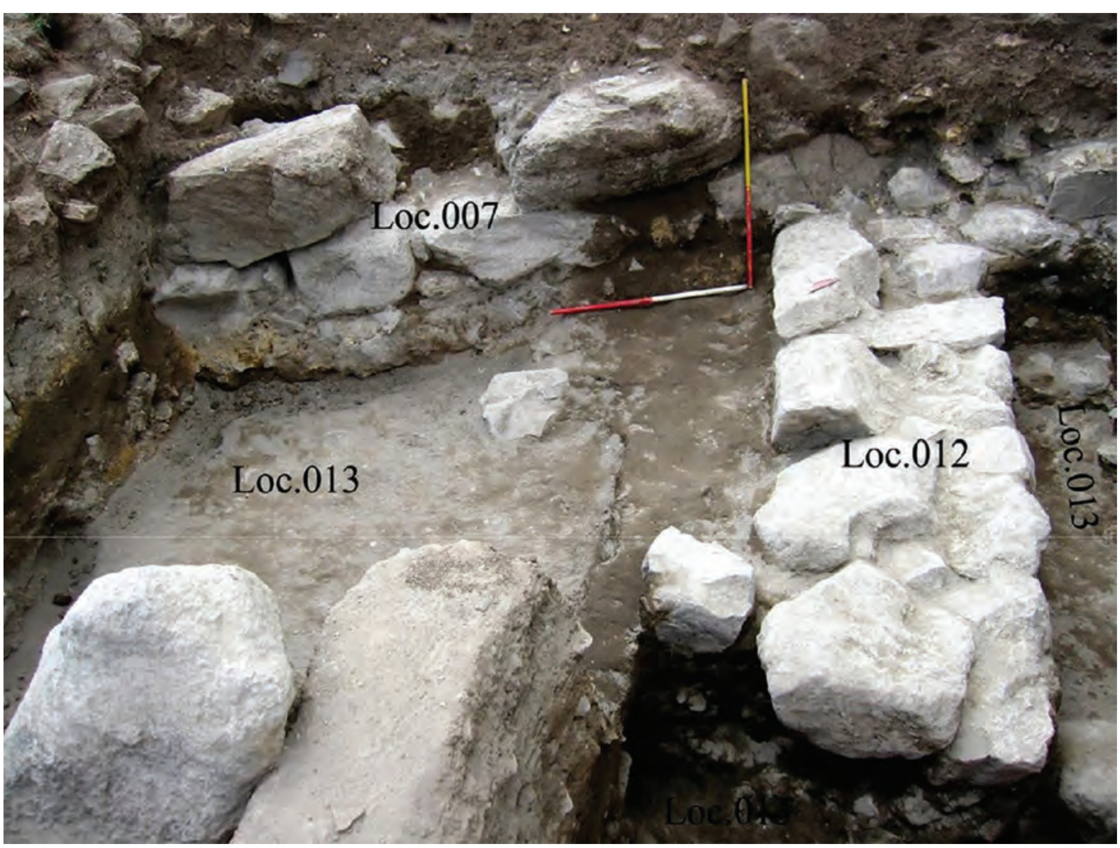


Figure 11.7 Zardkhaneh, multi-room stone building on Mound A fortress (Kazempour *et al.* 2017: Figure 9) (image courtesy of Mehdi Kazempour).

Figure 11.8 Zardkhaneh, grave goods from burials (after Kazempour *et al.* 2017: Figures 11, 20, 27) (images courtesy of Mehdi Kazempour).

Figure 11.9 Jafar Abad and Tu Ali Sofla, Eurasian-style horse-bits and tortoise carapace sounding box with fingerpick (Iravani Ghadim and Beikzadeh 2018: Figures 15–16, 23) (images courtesy of Iravani Ghadim).

Abillu, Larijan, Sangar, Jafar Abad and Tu Ali Sofla, all in the **Khodafarin** region (Faizkhah 2017; Timurpor Torabi 2017; Iravani Ghadim 2018). Eurasian-style horse-bits and bronze jewellery were found in the graves at **Jafar Abad** and **Tu Ali Sofla** (Kiani *et al.* 2018), as well as a musical instrument utilising a tortoise carapace as a sounding box (Figure 11.9). Association of these tomb sites, set within a rugged landscape of hilltop fortified sites, with a mobile pastoralist lifestyle needs further support from so far sparse zooarchaeological data and analysis.

Iron Age II, 1050–800 BC: imperial encounters

Through the centuries of Iron Age II, north-western Iran was increasingly impacted by and involved in the broader scale socio-political developments of the region at large, including the rise to power of the Assyrian empire, with its core region along the Tigris valley in Upper Mesopotamia to the west (Figure 11.1). More directly, the approximately contemporary rise of Urartu as a political entity included at least part of this region within its control, as suggested by similarities in military equipment from north-western Iran and other regions of Urartu in the 9th century BC (Piller 2012b). In addition to the archaeological evidence, therefore, from the 9th century BC we start to have relevant historical records to aid us in interpreting the socio-political circumstances of north-western Iran into the full Iron Age, even if understanding of the texts themselves and their geographical implications can be problematic (Levine 1973, 1974a; Balatti 2017: 119–133; Kroll 2020). These records underline the importance of the region as an economic and strategic prize, a cherished objective for imperial conquest and a zone hotly contested between Assyria and Urartu. The key archaeological site for Iron Age II remains **Hasanlu**, even if the state of its publication remains scattered and inadequate (Muscarella 2006), with input also from excavations at Dinkha Tepe, Geoy Tepe, Kordlar and Zendan-e Suleiman (Thomalsky 2006). Study of faunal remains through the Bronze Age and Iron Age occupation at Hasanlu indicates consistent reliance on herding of sheep and goat, with some cattle, as forming the basis of meat production for the population, with increasing evidence for equid breeding in the Iron Age levels (Davoudi and Mashkour 2019).

As mentioned above, period IVb at Hasanlu (Figure 11.10) is essentially a rebuild and substantial elaboration of the underlying IVc buildings (Roaf 2012). Our understanding of Hasanlu IVb is especially fulsome because of the dramatic circumstances of its end: sudden, violent and complete destruction by fire, which impacted both the citadel mound and areas of the Lower Town (Danti 2011). This catastrophic end, probably brought about by an invading Urartian army (Dyson 1960, 1989; Dyson and Muscarella 1989; Danti 2014) and often characterised as "the Pompeii of early Iron Age Iran" (Danti 2013a: xxv), provides archaeologists with an astonishing wealth of contextualised material, including more than 14,000 artefacts and the skeletons of 285 human victims and combatants in amongst the burnt and collapsed ruins of the citadel (Figure 11.11). Many recovered artefacts, including ceramics, ivories, seals and seal impressions, show strong Assyrianising influences alongside distinctive local styles (Winter 1977; Marcus 1996; Maras 2005; Collins 2006; Danti and Cifarelli 2016) as well as connections with the Caucasus and Caspian regions (Rubinson 2003; Thornton and Pigott 2011). Large quantities of weaponry, including mace-heads, swords, daggers, spears, belts, and arrows of stone, copper-bronze and iron, were also recovered (Figure 11.12) (de Schauensee 1988; Danti 2013b: Figure 17.16). Amongst the ceramics of Hasanlu IVb, especially distinctive are vessels of so-called Palace Ware, glazed wares and forms with Urartian and Assyrian influences. While the excavators and most commentators assign the destruction of Hasanlu IVb to *c*. 800 BC at the hands of an Urartian army (Dyson and Muscarella 1989), there are proposals that a date in the late 8th century BC is indicated by some items of material culture in the destruction level, including particular types of bronze bowl handles and horse bridles, underpinning Medvedskaya's (1988, 1991, 2017; Curtis 2019a) longstanding argument that Hasanlu IVb was destroyed not by an Urartian force in 800 BC but by an Assyrian army during Sargon II's eighth campaign in 714 BC, an argument refuted at length by Dyson and Muscarella (1989; see also Magee 2008; effectively countered by Danti 2011: 14–15).

The IVb citadel appears to have been heavily fortified with a major circumvallation plus internal gateways and towers all controlling access to the inner courtyard areas. Major buildings on the citadel (Figure 11.10), all designated BB for Burned Building as in period IVc, include horse stables and columned halls with suites of surrounding multi-storey rooms, interpreted as elite residences. BBII is one of the most important structures of Hasanlu IVb, interpreted as a monumental columned-hall temple of Mesopotamian/Assyrian style, with an inner sanctuary accessed through a multiple-recessed entrance (Dyson and Voigt 2003: Figure 20.1). It is likely that the deity's cult statue would have been placed within this small room, facing out to the outer sanctuary through the narrow, recessed opening. Other rooms of BBII include storage facilities with giant pithoi and other ceramic vessels. From within this impressive building more than 1,500 highly varied artefacts were recovered, including ivory eye inlays possibly from life-sized cult statues, comparable to examples from Chogha Zanbil (Dyson and Voigt 2003: 231). Other items include an exquisite lapis and gold-leaf vessel with lion-headed handle (Muscarella 1965) (Figure 11.13), a possible drum, red deer antlers (probably fallen from their attachment to the wall faces), wooden furniture, wall tiles, multiple mace-heads of stone (some with inscriptions of Elamite rulers), Kassite mosaic glass beakers, and hundreds of beads made from glass, lapis, carnelian, copper and Baltic amber. Within the enclosed Outer Sanctuary of BBII, the bodies of 55 adults and children were excavated. Military gear suggests that a few of the individuals were soldiers, perhaps attempting to protect women and children most of whom were adorned with valuable metal jewellery including so-called "lion pins" (Marcus 1993).

Undoubtedly the most extraordinary find from the destroyed buildings of Hasanlu IVb is the famous Hasanlu Gold Bowl, recovered from the ruins of BBI West located to the northwest of temple BBII (Figure 11.14) (Porada 1959; Dyson 1960; Winter 1989; Rubinson 2003; Danti 2014). The bowl, 20 cm high and with an 18 cm rim diameter, was found amongst the skeletons of three armed individuals within collapsed brickwork inside a small space, Room 9, of BBI West (Winter 1989: Figure 2; Danti 2014: Figure 6). The bowl's rich iconography (Figure 11.15), in repoussé and incised decoration around the bowl's exterior surface including its underside, depicts gods, humans, animals, chariots and furniture in a vivid combination of "the divine, the liturgical, and the mythological" (Winter 1989: 98) with strong Hurrian connections. The date of the bowl's manufacture has been variously assigned to the later second millennium BC, which would make it an heirloom by the time of Hasanlu IVb, or more directly to the Iron Age II phase of period IVb itself (Winter 1989: 91–92). Danti's (2014) meticulous analysis of the archaeological context of the Gold Bowl establishes that the bowl was in the hands of one of a group of three Urartian soldiers, wearing distinctive crested helmets with earflaps, all of whom were killed in a dramatic episode of collapse, tumbling along with masses of brickwork and burning timbers at least 3 m onto the ground floor level from an upper storey (Figure 11.16). A spectacular Silver Cup with two rows of iconography depicting soldiers, chariots and animals was also found in the burnt remains of BBI West (Figure 11.17) (Winter 1977: Figure 1).

Further evidence of life and death at Hasanlu during Iron II is provided by excavations on the Low Mound, in particular in Operation V at the eastern foot of the citadel (Danti 2011). Here a so-called "Artisan's House" was excavated, its contents including much evidence for metal-working such as moulds, hammers, crucibles, slag and a copper/bronze ingot (de Schauensee 1988). This building, which was rebuilt through several phases, suffered violent destruction by fire on at least two occasions the last of which is almost certainly contemporary with the citadel's destruction. The presence on floor surfaces of human, canid and equid skeletons within the final destruction debris of the Artisan's House (Figure 11.18) strongly suggests that the Lower Town of Hasanlu was spared none of the grim violence visited upon the elite residential and cultic quarters on the citadel by the invading army. The whole town was razed.

In addition to the plentiful human remains from the Hasanlu IVb destruction level (Kazzazi and Kranioti 2018), we also have some 100 graves of Iron Age II date from the Low Mound. While most of them were single primary inhumations, a number of the graves take the form of stone-built *hypogea* containing multiple burials accompanied by weapons and armour, so-called "warrior burials," suggestive of an increasing militarisation of society at Hasanlu IVb prior to its destruction (Figure 11.19) (Danti and Cifarelli 2015). In addition, more than 65 burials are known from contemporary levels at **Dinkha II** (Muscarella 1974b), plus further graves at **Haftavan** (Tala'i 2007; Tala'i and Aliyari 2009) and **Masjed-e Kabud** in Tabriz (Hojabri Nobari 2004). While there is some variety in mortuary practices at all these sites, including burying children in urns and use of mudbrick and stone tombs for adults, a common feature is the burial of the dead in extramural cemeteries. Also common is the increasing elaboration of grave goods, with deposition of ceramics, metal-ware including elaborate bronze belts (Cifarelli 2016; Cifarelli *et al.* 2018, 2019), jewellery and weapons, including a steady increase in the representation of iron weapons and items of adornment (Danti 2013b: 356). Overall, the level of craftwork is high and the materials used in the manufacture of grave goods are indicative of extensive networks of trade and exchange.

Figure 11.10 Hasanlu, citadel period IVb, 1050–800 BC (Danti 2013a: Figure 1.6) (image courtesy of Michael Danti).

Figure 11.11 Hasanlu, destruction at end of citadel period IVb (UPenn Museum image #78138) (image courtesy of Michael Danti).

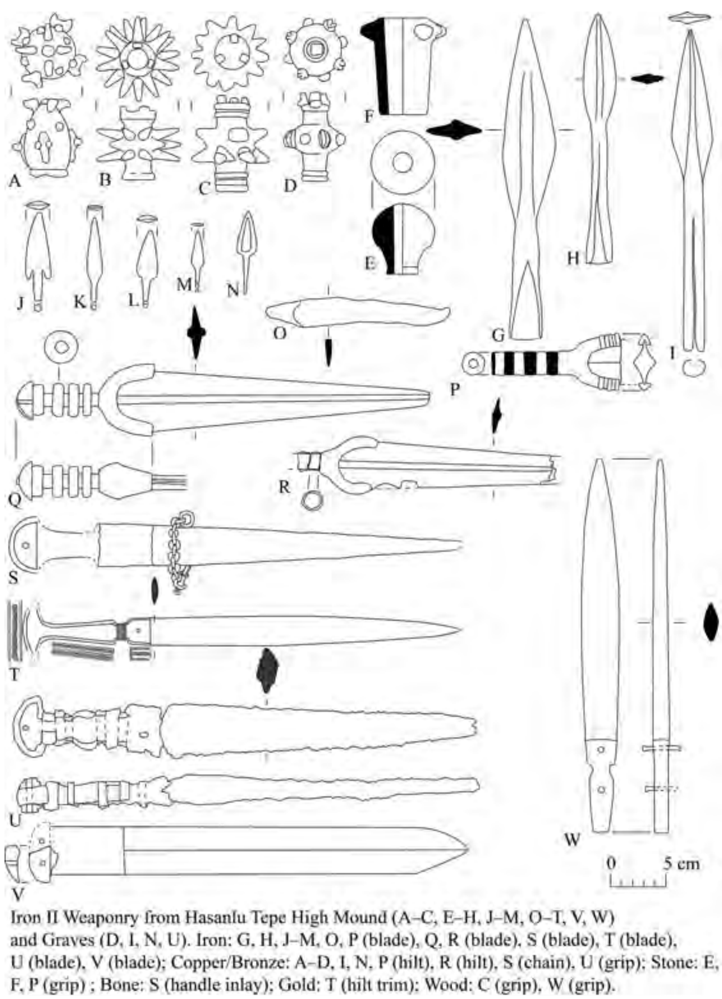


Figure 11.12 Hasanlu, citadel period IVb, metal weaponry (Danti 2013b: Figure 17.16) (image courtesy of Michael Danti).

Figure 11.13 Hasanlu, lapis and gold-leaf vessel with lion-headed handle (photo credit: Nima Fakoorzadeh, Baloot Noghrei Inst., courtesy of the National Museum of Iran).

Figure 11.14 Hasanlu, gold bowl shortly after excavation in 1958 (Danti 2014: Figure 5) (image courtesy of Michael Danti).

Figure 11.15 Hasanlu, gold bowl decorative scheme (after Winter 1989: Figure 6).

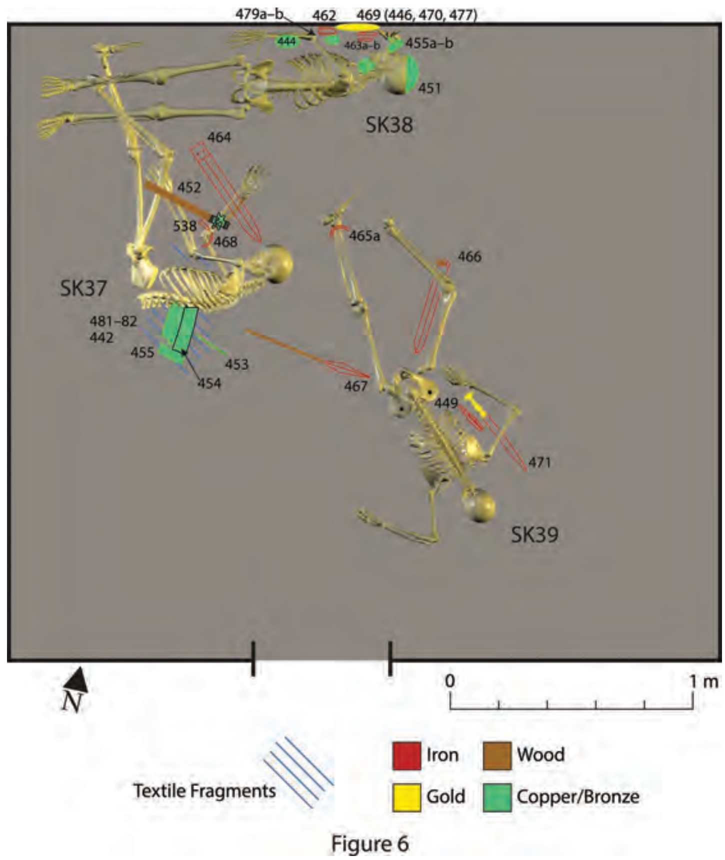


Figure 11.16 Hasanlu, reconstruction of BBIW Room 9 gold bowl context (Danti 2014: Figure 6) (image courtesy of Michael Danti).

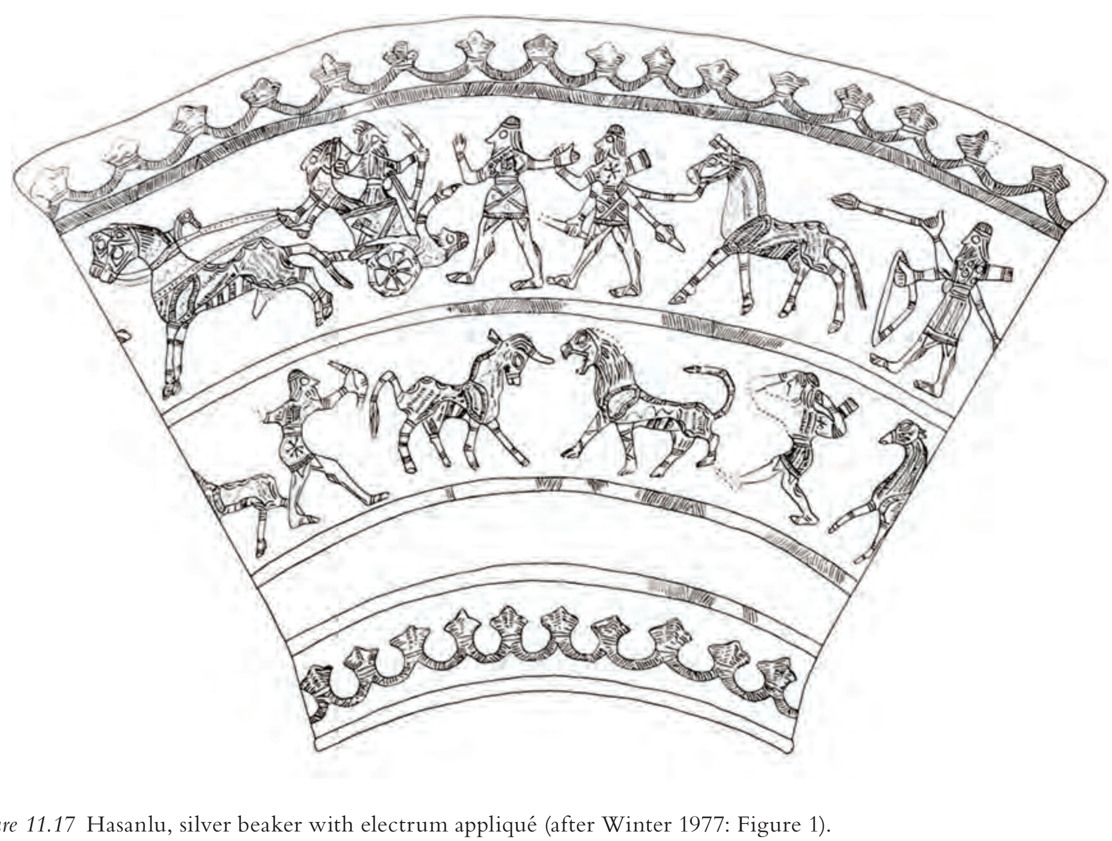


Figure 11.17 Hasanlu, silver beaker with electrum appliqué (after Winter 1977: Figure 1).

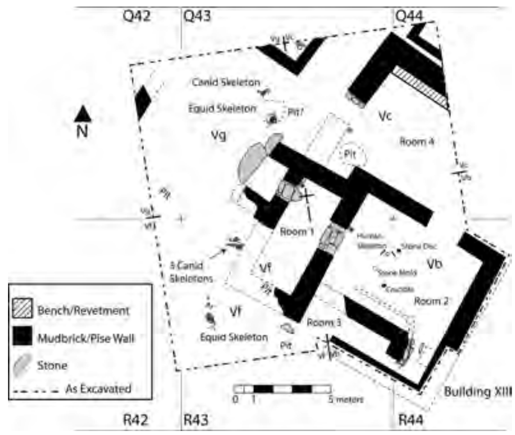


Figure 11.18 Hasanlu, Low Mound, Operation V, "Artisan's House" destruction level (Danti 2011: Figure 5) (image courtesy of Michael Danti).

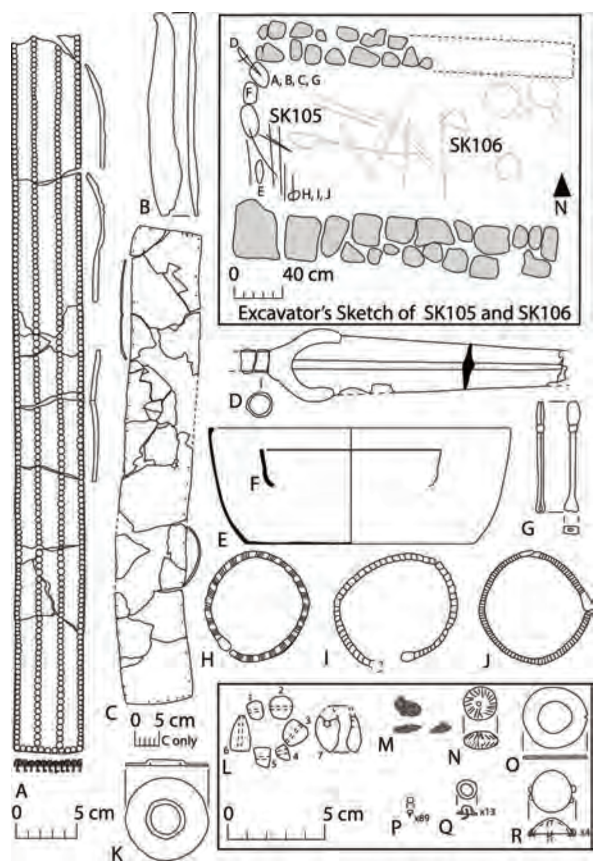


Figure 11.19 Hasanlu, Operation LIe Burial 3, Iron Age II (Danti and Cifarelli 2015: Figure 18) (image courtesy of Michael Danti).

During Iron Age II and into Iron Age III there is increasing use of stone anthropomorphic statues across north-western Iran, as attested at sites such as Shahr Yeri, Chinab, Ahmedabad and others (Burney 1979; Dehghani 2013). At **Shahr Yeri**, more than 500 stone statues were set within a possible temple, depicting adult males armed with daggers or swords (Figure 11.20) (Ingraham and Summers 1979; Dan and Cesaretti 2020), with evidence for the deposition of votive offerings including jewellery and metal vessels in platforms adjacent to the standing statues.

The end of Iron Age II and the transition to Iron Age III occurs at a time of decline in Assyrian power under Adad-nerari III (811–783 BC) and an expansion of Urartu under Ishpuini (828–810 BC) and his son Menua

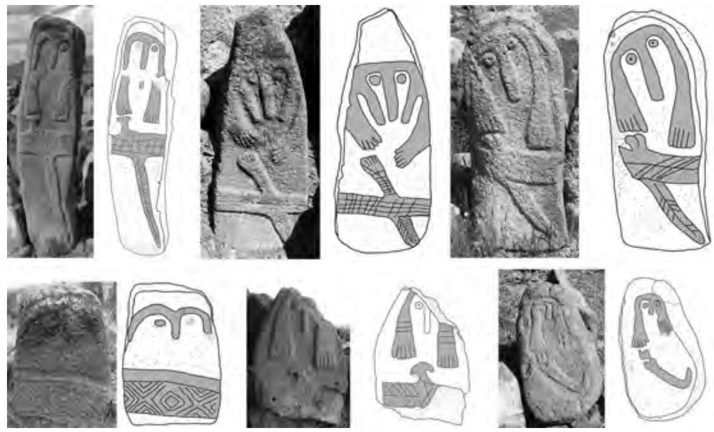


Figure 11.20 Shahr Yeri stelae (after Dan and Cesaretti 2020: Figures 5–10) (images courtesy of Roberto Dan).

(810–786 BC) (Ayvazian 2012). As discussed above, period IVb at Hasanlu is brought to a violent end involving total destruction by fire at about 800 BC, a date that has been contested. Contemporary levels at Kordlar are also destroyed at about the same time.

Iron Age III, 800–550 BC: between imperial powers

The Iron Age III period commences as Iron II ends, with the probable Urartian sacking of Hasanlu and other major sites of north-western Iran. Following its violent destruction at *c.* 800 BC, occupation at **Hasanlu** resumed with the so-called "Urartian fortress" of period III, but analysis and publication of this level have been poor (Muscarella 2006; Kroll 2010, 2013; Danti 2013b: 367–368). Walls of period IIIb were built directly on the burnt level of period IVb (period IVa "exists only as a fancy" in the excavator's mind according to Kroll 2013: 181), with no evidence for a significant episode of abandonment. A major fortification wall was constructed on the citadel, its foundations set deeply into the period IVb destruction debris (Figure 11.21). This wall may have been left unfinished but modest rectilinear structures, including possible stables, were built against its internal face (Kroll 2010: 25, 2013: 184, 2014). Missing from the "Urartian fortress" at Hasanlu is any evidence for the large-scale public buildings such as garrison blocks and storage facilities with large vessels that normally characterise major Urartian centres, and it is likely that Urartian occupation of the site was short and sharp (Figure 11.22). The low-lying location of Hasanlu is not ideal for a major Urartian strategic settlement and following the sacking of the town the Urartians applied their architectural talents and energies to more favourable locations in the region.

Thus, following the period IVb destructions at Hasanlu, there is increasing evidence in the form of fortified sites, settlements, rock-cut tombs and inscribed royal stelae for a major Urartian presence across much of the Urmia basin, especially to the north and west, through the later 9th and early 8th centuries BC, as attested in surveys that have detected more than 100 Urartian sites (Biscione 2003, 2009; Kroll 2014, 2020; Dan *et al.* 2019). This evidence betokens an upswing in Urartian fortunes in their ongoing struggles with their Assyrian opponents to the west, with local Iranian polities such as the Mannaeans striving to survive (Postgate 1989; Zadok 2006, 2013: 415–416; Radner 2016; Balatti 2017: 250–256; Hassanzadeh 2017). The Urartians constructed a network of fortified sites across the Urmia basin, with large fortresses at key communication nodes and smaller forts protecting routeways (Figure 11.23) (Kroll 1976; Zimansky 1985; Danti 2013a; Biscione and Dan 2019), thus blocking Assyrian or other access to the mountain passes vital for Assyrian campaigning in the region and beyond into the central Zagros. Key sites include Urartian citadels at **Haftavan** (Burney 1970, 1972: 137–142) and **Kal Kharabe** (Mohammadi *et al.* 2018), the hilltop fortress of **Qalatgah** controlling the Ushnu valley and yielding inscriptions of the Urartian kings Ishpuini and Menua at *c.* 800 BC (Muscarella 1971; van Loon 1975), the rock niche at **Ain-e Rum** with an Urartian inscription identifying it as a "fountain of Menua" (Salvini 2019), **Tash Tepe** (Pecorella and Salvini 1984; Kroll 2005b) and **Agrab Tepe** overlooking the Solduz valley (Muscarella 1973). The multi-period site of **Anaqizli Tapeh** is situated on a natural rock plateau on the Qara Zia'eddin plain (Heinsch *et al.* 2019), on a major communication route controlled by Urartu prior to the foundation of nearby Bastam by Rusa II.

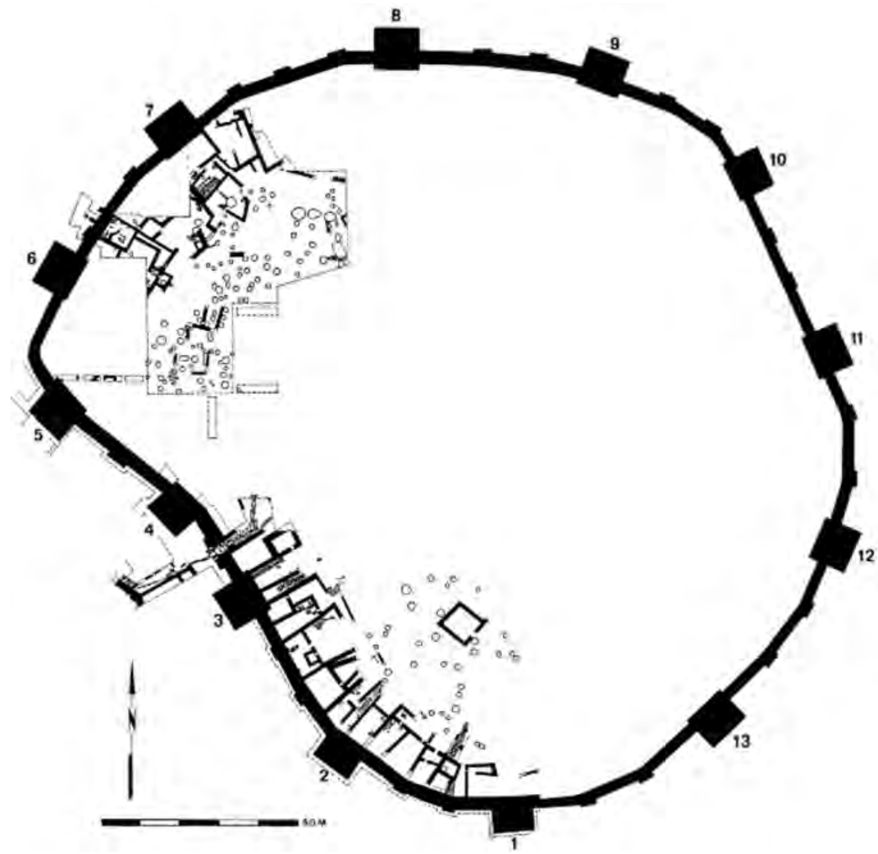


Figure 11.21 Hasanlu, citadel period III (after Kroll 2013: Figure 6).

Figure 11.22 Hasanlu, Urartian red-slipped trefoil jar from Operation Z26 (Kroll 2013: Figure 8).

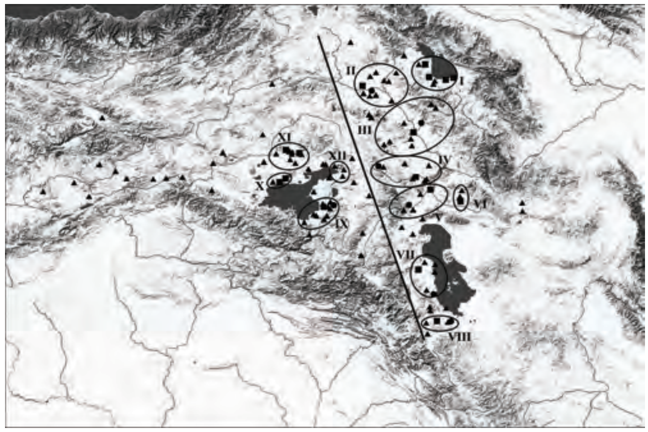


Figure 11.23 Urartian fortified sites in north-western Iran and adjacent regions, arranged in clusters (Biscione and Dan 2019: Figure 6) (image courtesy of Roberto Dan).

Figure 11.24 Bastam, view from the northeast and site plan (Kleiss 1979: Taf. 2) (permission courtesy of Stephan Kroll).

Much of our archaeological knowledge of this episode comes from the enormous Urartian fortress site of **Bastam** in far north-western Iran north of Khoy, founded by the Urartian king Rusa II, 685–645 BC, and the largest of all Urartian fortified sites (Figures 11.24–11.25) (Kroll 1972, 2020; Kleiss 1979, 1988, 1989). The adjacent plain shows significant traces of Urartian irrigation activity. The Urartian site of Bastam comprises a rectangular eastern complex built in the valley below the fortress, with guardrooms and a three-aisled stable building. This complex appears to relate entirely to stabling and exercising of horses. At the foot of the fortress there is a settlement area, 600 × 300 m, featuring stone-built houses accommodating officials and merchants. The fortress itself covered 800 × 400 m and included a series of staged citadels, the middle of which contained a square tower-temple of Haldi, the major Urartian deity. The governor's residence was located in the upper citadel. A few fragments of inscribed Urartian clay tablets (Figure 11.26), very rare examples from Iran, contain royal instructions to officials. Typical Urartian items of material culture such as burnished red ceramics and a few cylinder seals were also found.

Amongst the many remarkable features of Bastam, a suite of rooms between the middle and upper citadels stands out (Zimansky 1979, 1988). Three adjacent rooms (Figure 11.27) contained some 600,000 animal bones principally of sheep and goat but also dog, cow, deer and, equid, generally lacking heads and feet and therefore from butchered creatures. Mixed amongst the bones were more than 1,200 clay bullae, many impressed with king Rusa II's seal and some with short inscriptions (Figure 11.28) (Dara and Shirzade 2017; Dara 2019). This

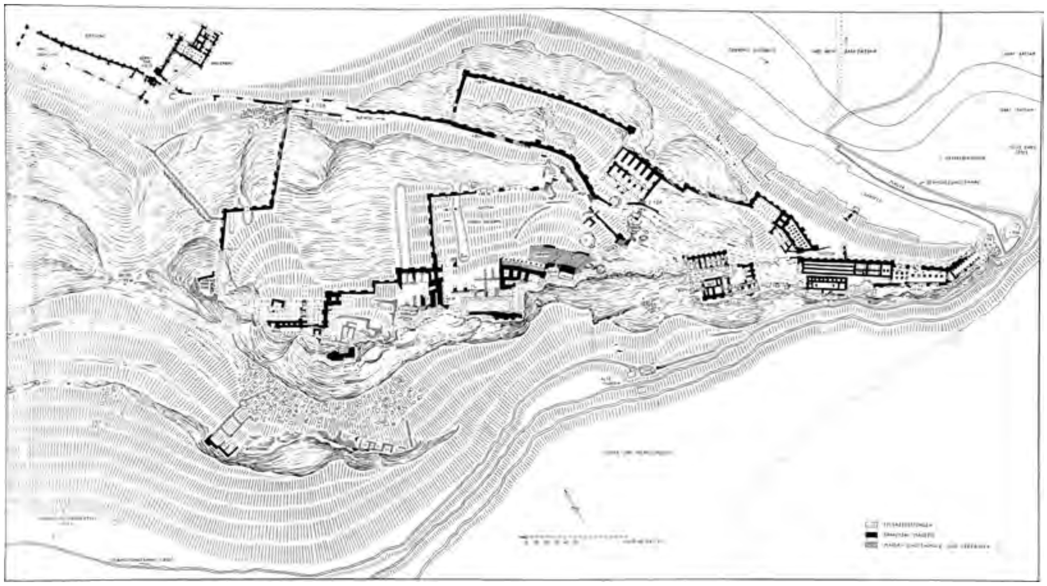


Figure 11.25 Bastam, plan of the citadel (Kleiss 1979: Abb. 36) (permission courtesy of Stephan Kroll).

Figure 11.26 Bastam, Urartian clay tablet with seal impression (Kleiss 1979: Taf. 28) (permission courtesy of Stephan Kroll).

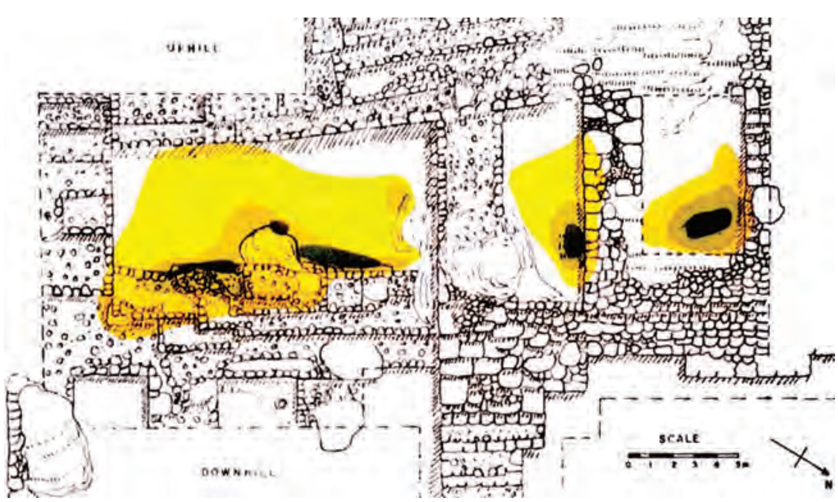


Figure 11.27 Bastam, rooms with concentrations of animal bones and clay bullae (Zimansky 1979: 55) (permission courtesy of Paul Zimansky).

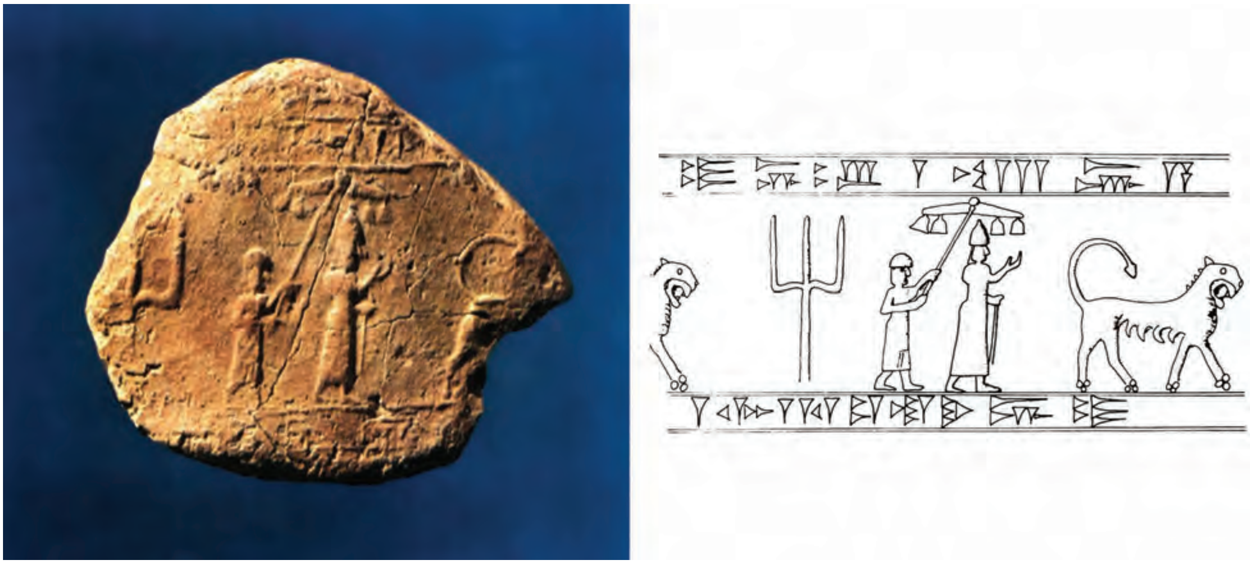


Figure 11.28 Bastam, bulla with inscribed seal impression of king Rusa II, son of Argishti, 7th century BC (Zimansky 1979: 53) (permission courtesy of Paul Zimansky).

striking assemblage of items is matched by a discrete layer of bones and inscribed bullae also of Rusa II at Ayanis in Turkey (Işık and Işıklı 2015), and by similar concentrations of decapitated animal remains at the major Urartian citadel sites of Toprakkale in Turkey and Karmir Blur in Armenia, although here lacking the sealed bullae as found at Bastam and Ayanis. In his thoughtful discussion of these special deposits, Paul Zimansky (1988: 123) concedes that

> it is possible that these assemblages have to do with a pollution concept or taboo which was part of the conceptual system that maintained the Urartian social order. The evidence of royal involvement, be it personal or somewhat more general, would accord well with this view, since the behavior of monarchs is inevitably constrained by elaborate prohibitions and ritualistic imperatives.

Others have interpreted the deposits as the remains of meat stores with the sealings being used to keep account of meat stocks (Kleiss 1989).

To the south and west of the Urmia basin the Urartian hold was not so strong, with greater Assyrian and local influences on the sites of Kurdistan (Levine 1974a). Approaches to and through this region were marshalled by a complex of fortified hilltop sites such as Jowšātū, Bari, Jan Aqa and Qal'e Bardineh (Binandeh and Kargar 2008; Hassanzadeh 2009; Mollazadeh 2015; Binandeh *et al.* 2017; Binandeh 2019). At **Ziwiye** near Sakkiz, possibly ancient Zibiya, a spectacular collection of silver, gold and ivory objects deposited with a burial in a bronze coffin was found in about 1947, including a gold belt with depictions of stags, ibexes and lion's heads, a bracelet with lion-head finials, a ram's head rhyton and assorted weapons and items of adornment dated to the 8th–7th centuries BC (Ghirshman 1950; Godard 1950; Barnett 1956; Kantor 1960; Dyson 1963; Wilkinson 1975; Motamedi 1997; Curtis 2001, 2017; Mazzoni 2011), although doubts have been expressed regarding the integrity and authenticity of the deposit (Muscarella 1977, 2018). If genuine as an assemblage, it demonstrates a distinctive mélange of Assyrian, Urartian, Scythian and local Mannaean craft and iconography. A series of excavation campaigns at Ziwiye, not yet fully published, have recovered a range of materials, including exquisite strips of ivory and bone carved with scenes strongly evocative of Neo-Assyrian palace reliefs, such as royal wild bull and lion hunting and military campaigns but with significant Urartian, Mannaean and other more local traits, all suggestive of local manufacture (Figure 11.29) (Amelirad 2019; Amelirad and Razmpoush 2019; Thomalsky 2019: 144–146). So far peculiar to northwestern Iran in this period was the manufacture of bimetal swords, i.e. swords taking the form of a bronze exterior surrounding an iron core (Kontani 2005).

Other key sites of the region, with varying degrees of Urartian and/or Assyrian influence (MacGinnis 2016; Balatti 2017: 250–256), include **Kani-zirin** (Qanbari-Taheri *et al.* 2020), **Qalaichi**, where a columned hall and religious structure decorated with polychrome glazed bricks have been excavated (Kargar 2004; Mollazadeh 2008; Hassanzadeh and Mollasalehi 2011, 2017; Nezamabadi *et al.* 2011; Hassanzadeh 2016a; Hassanzadeh and Curtis 2021), and **Rabat Tepe** on the Lower Zab close to the Iraq border, with an 8th century BC decorated pavement formed of pebbles in concentric circles (Figure 11.30) and examples of high-quality painted and glazed bricks (Figure 11.31) with inscriptions suggesting the site's identity as ancient Arzizu (Kargar and Binandeh 2009; Reade and Finkel 2014; Holakooei *et al.* 2017; Ebrahimipour 2019). Just across the border on the Peshdar plain in Iraq, Iron Age sites in the Dinka Settlement Complex attest Assyrian attempts to control the Lower Zab route to and from the high Zagros (Radner *et al.* 2019). Underlining the importance of Assyrian influence in this area, the style of glazed bricks found at several sites across the region, as far west as Satu Qala in Iraqi Kurdistan (Van Soldt *et al.* 2013), shows stronger connections to Assyrian than to Elamite glazed brick production (Gries and Fügert 2019). At **Sarrez** near Kamyaran, Babylonian influence is attested on a distinctive decorated bronze nipple-based beaker with winged bull motif (Figure 11.32) (Amelirad and Razmpoush 2015), directly comparable to unprovenanced examples in museum and other collections dating to the 10th–9th centuries BC and believed to originate entirely from western Iran (Muscarella 1974a).

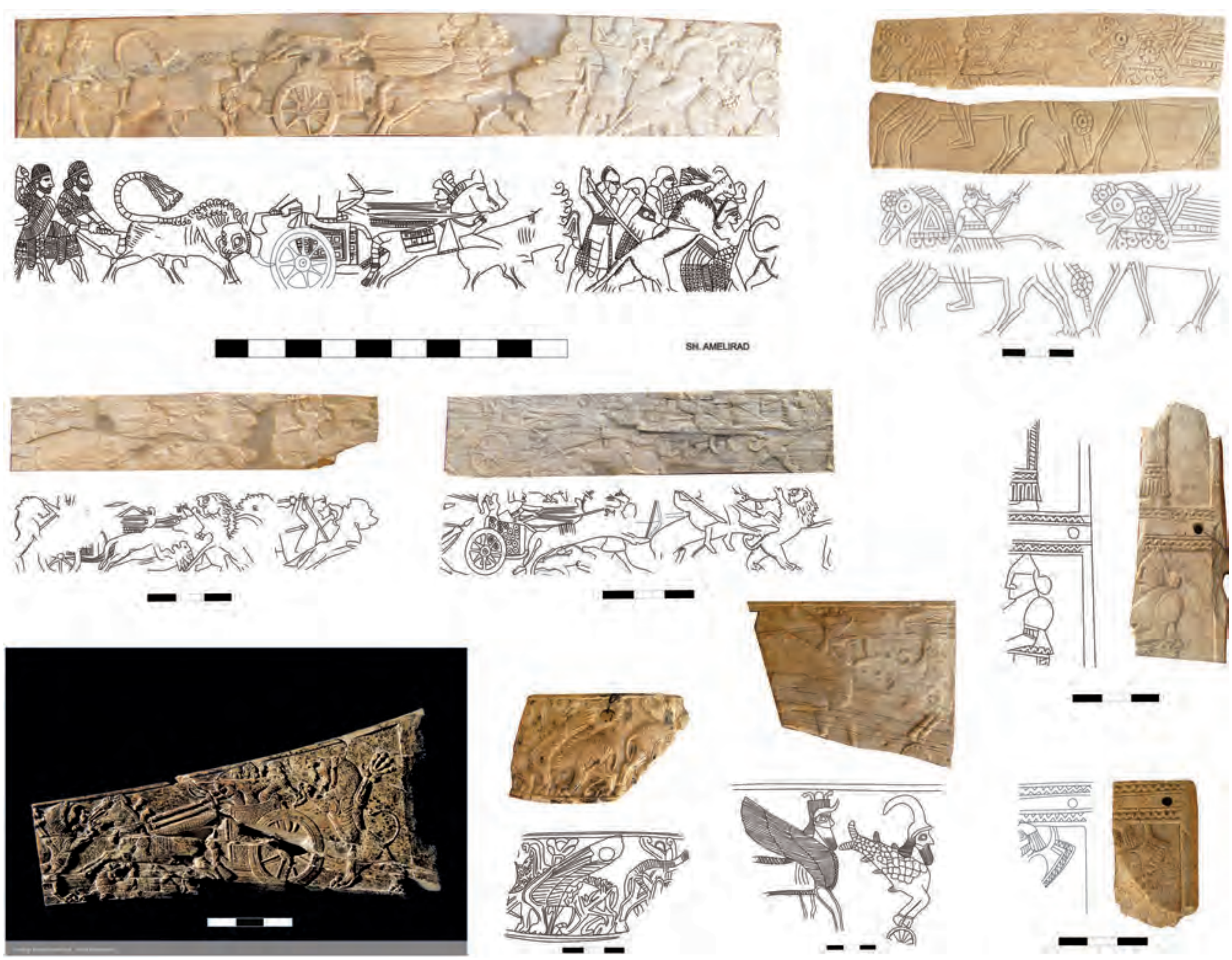


Figure 11.29 Ziwiye, ivory and bone plaques (Amelirad and Razmpoush 2019: Figures 1–4; Nokandeh 2017: Figure 52) (images courtesy of Sheler Amelirad; bottom left photo credit: Nima Fakoorzadeh, Baloot Noghrei Inst., courtesy of the National Museum of Iran).

Figure 11.30 Rabat Tepe, pebble floor (Kargar and Binandeh 2009: pl. 5) (images courtesy of Alireza Binandeh and Reza Heydari).

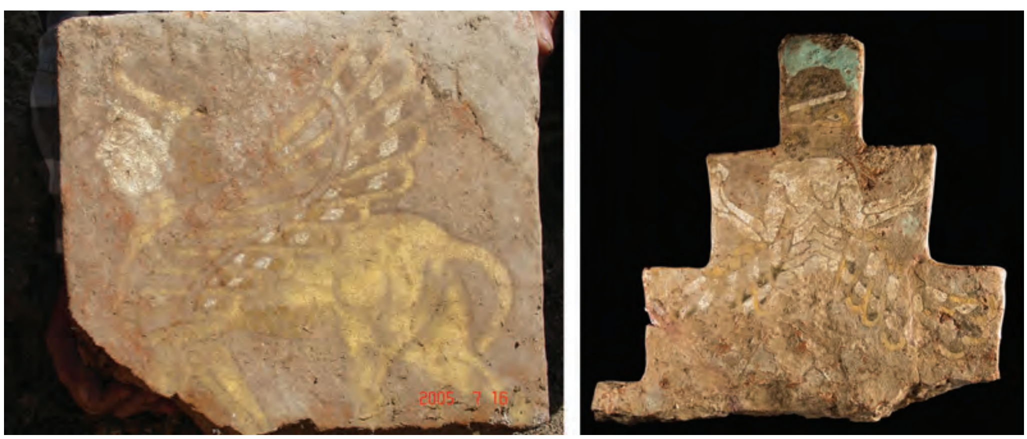


Figure 11.31 Rabat Tepe, painted bricks showing winged lion-man (Kargar and Binandeh 2009: pl. 7) and winged genie (images courtesy of Alireza Binandeh and Reza Heydari).

Figure 11.32 Sarrez, decorated bronze beaker (Amelirad and Razmpoush 2015: Figure 5) (images courtesy of Sheler Amelirad).

Also significant are the cemeteries at Guringan (Sorkhabi and Salimi 2019), Sanandaj (Amelirad *et al.* 2012; Sołtysiak *et al.* 2018), Kul Tarike (Rezvani and Roustaei 2007), Changbar (Hassanzadeh 2016b: 373), Mala Mcha (Amelirad *et al.* 2017), Shiran and Ruwar (Figure 11.33) (Ghasimi *et al.* 2019; Mucheshi and Soltani 2019). A looted burial at **Kani Koter** contained a fine bronze belt with relief depictions of galloping lions, gazelles, bulls, deer, wild sheep, goat plus compound fantastic creatures, probably of 7th century BC date (Figure 11.34) (Amelirad and Azizi 2021). Along with other excavated sites of the central Zagros such as **Baba Jan** (Goff 1977, 1978, 1985), and early Median impacts attested at **Nush-i Jan** and **Godin II** (see below), altogether these sites provide evidence for "a series of small rich kingdoms having their own local élite, handicraft production and specific

Figure 11.33 Ruwar, Iron Age tomb in the Sirwan river area, Hawraman, Kurdistan. Site location, tomb and selected grave goods (Ghasimi *et al.* 2019: Figures 2, 6, 10–11, 13, 15) (images courtesy of Taher Ghasimi).

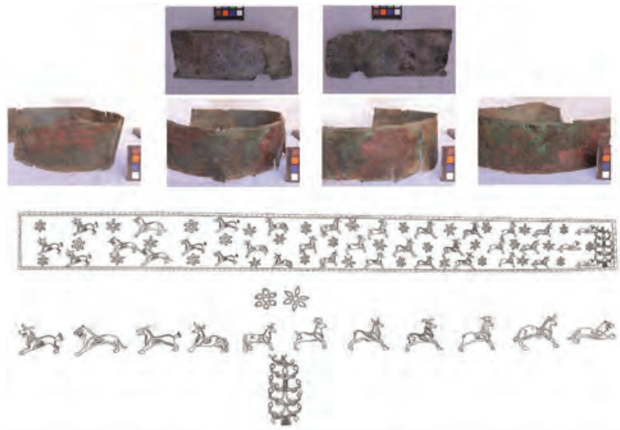


Figure 11.34 Kani Koter, bronze belt from grave (Amelirad and Azizi 2021: Figure 13) (images courtesy of Sheler Amelirad).

Figure 11.35 The 8th Campaign of Sargon II in 714 BC (Sauvage 2020: 123) (image courtesy of Mustapha Djabellaoui and Martin Sauvage).

cultural identity, but lacking the complex administrative system of the Mesopotamian states" (Balatti 2017: 255). To the east, in the 8th–7th centuries BC the site of **Zendan-e Suleiman I** served as a spectacular mountain sanctuary with structures and terraces arranged around a natural conical peak containing a crater lake (Boehmer 1967; Kleiss 1971; Naumann 1977; Thomalsky 2006, 2019).

Taken together, the diffuse evidence from these sites of western and north-western Iran gives tantalising hints at the nature of an Iron Age territory historically known to us as Mannaea, situated in the highland zone south and southwest from Lake Urmia and first attested in records of the Assyrian king Shalmaneser III in 843 BC

(Hassanzadeh 2016a). From the Assyrian and Urartian records we can envisage Mannaea as a loose confederation of small states or kingdoms occasionally obliged by Assyrian and Urartian threats into a form of cohesive alliance initially led by a king named Udaku, based at Izirtu (= Qalaichi?) to the south of Lake Urmia (Levine 1974a: 113–116; Postgate 1989; Zadok 2006; Bryce 2009: 443–445; Binandeh 2020). During the 8th century BC, Mannaea coalesced more firmly into a unified state whose relations with Assyria alternated between episodes of relative calm interspersed with outright warfare. Beyond doubt is the high technical craftworking skill of the Mannaeans, as attested above all in distinctive assemblages of metalwork as outlined above. As with Urartian elite material culture, Mannaean artisans of high-status artwork borrowed their narrative repertoire and motifs largely from Assyria to the west but always executed them with a flair all their own (Sheikhi *et al.* 2017).

The Urartian presence in the Urmia basin region was severely disrupted through the famous eighth campaign of Sargon II in 714 BC (Figure 11.35) (Zimansky 1990; Jakubiak 2004; Kroll 2020), which brought the region under Assyrian control at least for a while. But little is known about north-western Iran in the centuries of the later Iron Age (Summers and Burney 2012; Ebrahimi *et al.* 2019), during which the Medes rose to ascendancy nor concerning the subsequent rise to domination of the region by the Achaemenid empire, although the Mannaean state was still attested into the Achaemenid period. Finds of so-called Triangle Ware across the region appear to date to the incorporation of the region into the Achaemenid empire in the late 6th century BC (Dyson 1999; Kroll 2000; Khatchadourian 2018: 209–227).

Northern, Central and North-Eastern Iran in the Iron Age, 1250–600 BC

Looking eastwards from the Lake Urmia basin and north-western Iran across northern Iran, we can detect a similarly complex pattern of local cultural trends situated within broader scale socio-political developments, punctuated by significant episodes of disruption, through the Iron Age of the northern edges of the central Iranian plateau, the Alborz range and the Caspian Sea basin regions of northern Iran (Table 11.1) (Mousavi 2013a). A notable feature is the apparent absence of significant Late Bronze Age settlement across the entire region, which may be an artefact of archaeological investigation, or lack thereof, or may be associated in some way with other regional settlement disruptions, as attested in the Qaleh period in the Fars region, 1600–1100 BC, for example (Chapter 8), including climatic adversity in the form of a 300-year episode, starting at *c.* 1200 BC, of severe cold and aridity affecting the eastern Mediterranean, Southwest Asia and beyond (Kaniewski *et al.* 2019). In this section, we examine key sites of the Iron Age of northern Iran region by region (Figure 11.1), moving eastwards along the southern reaches of the Caspian and the adjacent Alborz range before studying the evidence from the plains on the northern and western fringes of the Dasht-e Kavir.

Geographically, northern Iran is a highly distinctive and varied region, as outlined in Chapter 2, dominated by the great Alborz mountain range that divides the Caspian basin and its low-lying littoral from the uplands of the Iranian plateau to the south (Bazin *et al.* 2011). Nestling into the relatively fertile and well-watered southern slopes of the Alborz are several of the great plains of northern Iran, including the Qazvin, Savajbulaq, Tehran and Varamin plains, while further south the Qom and Kashan plains draw their moisture from the eastern slopes of the Zagros. In all these regions we find occupation of Iron Age date even if the picture is fragmented and not easy to synthesise (Piller 2004; Mousavi 2005b).

Along the coastal plains and upland regions of the Alborz bounding the Caspian Sea to its south, there are distinctive ecotones that hosted significant human activity in the Iron Age, as in earlier periods. From the west, these regions comprise Gilan, Mazandaran and Golestan (formerly Gorgan), each of which contains a stretch of littoral 1–30 km in width plus an adjacent segment of the Alborz range. Major north-south passes through the Alborz in these regions are restricted to the course of the Sefid Rud, debouching at Rasht, the Karaj-Now Shahr road west of Tehran and the tougher road to Amol and Sari northeast of Tehran, which allows access to the Gorgan plain at the Caspian's south-eastern corner. The Alborz north-facing slopes comprise a humid, heavily vegetated and wooded environment (Bobek 1968; Shumilovskikh *et al.* 2016). Human settlement has tended to focus on the foothills and coastal plains where possible, although communities must have been exploiting the rich fauna and flora of the upland slopes through time.

Key Iron Age sites of the southern Caspian region are concentrated along the banks of the Sefid Rud, the major river of the whole region, and its tributaries, including the famous sites of Marlik and Kaluraz in Gilan province (Haerinck 1988; Piller 2004; Fahimi 2017). At **Marlik**, also known as Cheraq-Ali Tepe, Ezat Negahban (1964, 1965, 1996, 1998; Abdi 2010; Oudbashi and Hessari 2017) excavated 53 stone tombs mainly of Early Iron Age date set into the slopes of a natural hill with two rocky summits (Figures 11.36–11.37). Many of the dead were accompanied by spectacular grave goods (Figures 11.38–11.40) including gold, silver and tin-bronze vessels, glass and frit vessels, highly sophisticated human and animal figures (with an emphasis on humped zebu

Table 11.1 Comparative chronology of the Late Bronze Age and Iron Age of the central plateau of Iran (after Fahimi 2019: Figure 5)

	Region	*Central Iranian Plateau*									
Period	*BC*	*N*	*NW*		*NE*		*C*			*S*	
Late Iron Age (III)	500								Sialk VII		Veshnoveh
	600						Zarboq	Shamshirgah		Gurtan	
	700			Sagzabad X			Wasun				
Middle Iron Age (II)	800		Tepe Ozbaki								
							Sialk B		Sialk VI		
	900		Qabrestan	Sagzabad VIII							
							Sarm		Qoli Darvish (A1)		
	1000										
				Sagzabad VII		Hesar (V?)					
Early Iron Age (I)	1100	Qeytariyeh Kahrizak	Khorvin Geyran Tepe	Sagzabad VI	Shahrud Gandan-e		Sialk V		Sialk V		
	1200	Ma'murin	Maral Tepe		Kharand				Qoli Darvish (A2)	Milajerd	
		Pardis	Dushan Tepe			Hesar (IV?)					
	1300			Sagzabad V					Qoli Darvish (A3a)		
Late Bronze Age	1400	Pishva									
				Sagzabad IV					Sialk IV		
	1500					Hesar (IIIC)			Qoli Darvish (A3b)		

cattle), jewellery of gold, carnelian, glass, frit, shell and bone, many tin-bronze weapons (mace-heads, swords, spearheads, daggers, axes and arrowheads) and a wide range of Early and Late Iron Age ceramic types including zoomorphic and anthropomorphic vessels and typical long-spouted pots. Perhaps most famous is the Marlik Gold Beaker from Tomb 26 (Figure 11.41) (Negahban 1996: col. pl. xiii), adorned with winged bulls either side of a tree of life symbol. The decoration of this extraordinary vessel was achieved through a combination of techniques including repoussé, soldering, plating, inlay and lost-wax (Mousavi 2013a: 401). Various types of deer feature prominently in scenes on metal vessels and as figurines (Kawami 2005).

Fourteen cylinder seals and five stamp seals were also found in the Marlik tombs, mainly in the late-second millennium BC Mitanni style but with some later examples two of which have Middle Assyrian inscriptions. It is not clear whether these seals functioned as administrative devices within their north Iranian contexts – there are no clay sealings nor sealed tablets from anywhere in this region, or nearby, to support such an interpretation. A comparative study of seals from cemetery and settlement sites across north-central Iran indicates that seals from human burial contexts tend to be made of softer materials than seals from settlement contexts, possibly because the former were not designed for use within an administrative system (Mucheshi and Tala'i 2012). There are also indications at Marlik that some of the burials contained horses and horse trappings. Human remains were poorly preserved within the tombs but the variable distribution of grave goods within the graves, including some extremely rich tombs such as Tomb 52 with 180 artefacts and Tomb 35 with more than 200 precious objects, suggests the society represented by the Marlik cemetery may have been significantly stratified (Abdi 2010), although it may be a step too far to claim that Marlik represents "the Royal Cemetery of a long-forgotten kingdom" (Negahban 1996: xlix). Brief excavations at the nearby settlement site of **Pileh Qal'eh** exposed architectural levels contemporary with the Marlik cemetery (Negahban 1996: 11). Faunal remains from Pileh Qal'eh attest hunting of a range of species including red deer, boar, sheep, goat and gazelle – all wild – with cattle as the dominant domesticated animal (Davoudi *et al.* 2019).

Further along the Sefid Rud, excavations at **Kaluraz** uncovered further richly furnished Iron Age tombs in association with stone structures, with ceramics and metal vessels comparable to the earlier tomb groups from

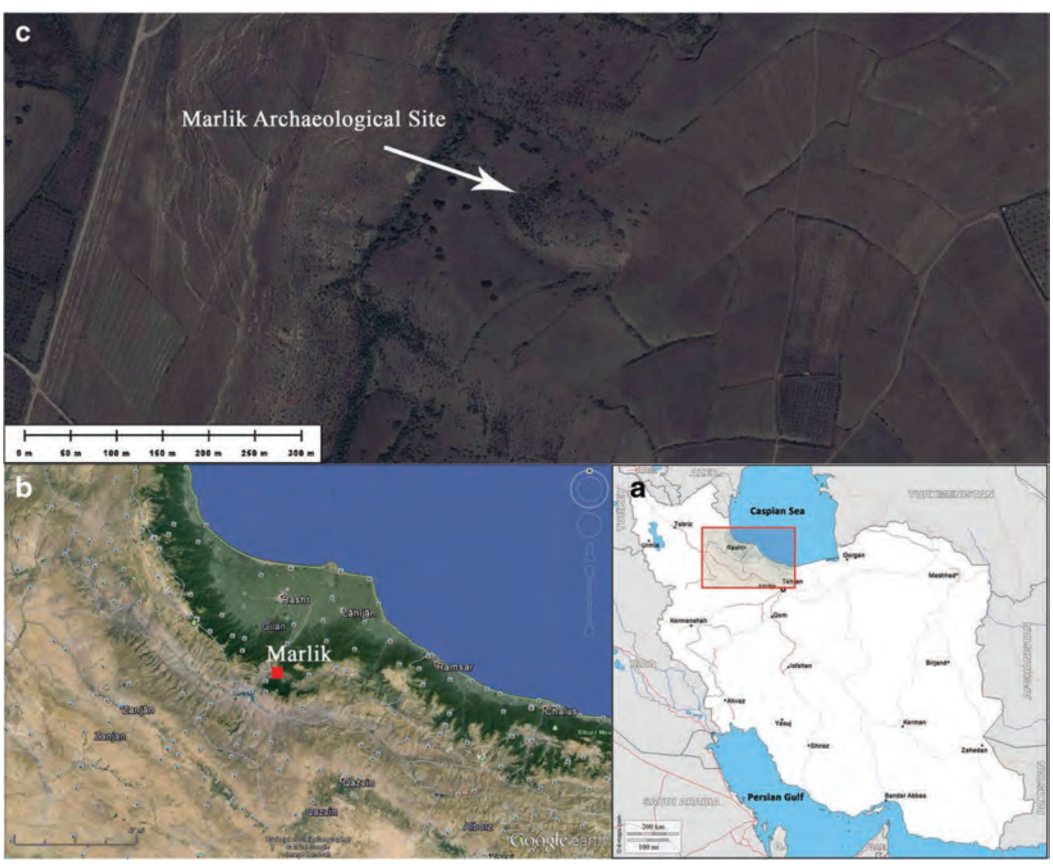


Figure 11.36 Marlik, site location map and aerial view (after Oudbashi and Hessari 2017: Figure 1) (images courtesy of Morteza Hessari).

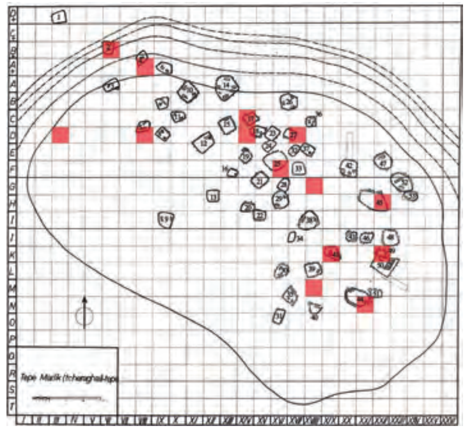


Figure 11.37 Marlik, excavated area and numbered graves (Oudbashi and Hessari 2017: Figure 2) (image courtesy of Morteza Hessari).

Figure 11.38 Marlik, selected metal grave goods (Oudbashi and Hessari 2017: Figure 3) (image courtesy of Morteza Hessari).

Marlik and other sites of the Gilan region, including a contemporary cemetery at **Toul-e Talish** (Egami *et al.* 1965; Hakemi 1968, 1973, 2017; Fukai and Matsutani 1982; Khalatbari 1997; Tadahiko *et al.* 2006; Vahdati 2007). Included in one of the Toul-e Talish tombs was a bronze bracelet bearing an Urartian inscription naming Argishti of the 8th century BC, interpreted as a later addition to a tomb largely of 10th–9th century BC date (Figure 11.42) (Vahdati 2007). In addition to the legally excavated sites and tombs, the region has suffered considerably from illicit looting of tombs and accidental discoveries such as the **Kelardasht** treasure including a famous gold bowl and golden dagger (Figure 11.43) (Samadi 1959; Rafiei-Alavi 2019). Japanese and Iranian excavations in the region of Kaluraz (Tadahiko *et al.* 2003; Ohtsu *et al.* 2005; Takuro 2005; Fallahian *et al.* 2006;

Figure 11.39 Selected gold grave goods from Marlik (top row, middle left, bottom right), Kaluraz (middle right) and Kelardasht (bottom left) (photo credit: courtesy Jebrael Nokandeh, National Museum of Iran)

Ryuji 2006) revealed further Iron Age remains at **Jalaliyeh**, including mudbrick and stone architecture, and at **Jamshid Abad**. Domesticated sheep and goat, with some cattle, alongside hunting of deer and boar, characterise the animal exploitation at Jalaliyeh (Mashkour 2005; Davoudi *et al.* 2019). Eastwards around Deylaman further Iron Age cemeteries were excavated at **Ghalekuti** and **Lasulkan**. Palaeoenvironmental evidence from Lake Neor suggests a major presence of herded animals and the cultivation of cereals and fruit trees

Figure 11.40 Marlik, selected ceramic grave goods (Nokandeh 2017: Figure 60) (photo credit: courtesy Jebrael Nokandeh, National Museum of Iran).

through the Iron Age (Ponel *et al.* 2013). At all these sites ceramic assemblages include wheel-turned vessels in the so-called Orange Ware tradition, widely distributed in Iron Age III across the Gilan and Mazandaran stretches of the Alborz range of northern Iran and arguably associated with the introduction of communal ceremonial practices across the region (Arimatsu 2015).

Our knowledge of the Iron Age of the Alborz range eastwards from Qazvin-Deylaman is sparse. The situation in north-eastern Iran closely mirrors that in the southeast (see below), with the Early Iron Age of the region cited as "one of the least understood periods of Iranian archaeology" (Vahdati 2018: 51), although surveys and excavations across the region are steadily enhancing our understanding of the richness of Iron Age occupation in this previously under-researched area of Iran (Roustaei 2012a; Sharifi and Motarjem 2014). Following the abandonment of key sites of the region, including Hissar and Tureng Tepe at *c.* 1700–1650 BC (Chapter 9), we lack evidence for reoccupation of these and other sites until the 10th century BC at the earliest (Roustaei 2010a). Renewed investigations at **Tepe Hissar** on the Damghan plain, in advance of railway construction potentially impacting the site, recovered the first significant evidence of Iron Age occupation at Hissar (Figure 11.44), including copper-smelting ore and slags, pottery of Iron Age II date and human burials with pottery and beads (Roustaei 2010a). On the coastal plain at the south-eastern corner of the Caspian Sea, excavations at **Gohar Tappe** have begun to shed light on settlement in this region, including the evidence from "warrior burials" of Iron Age I date with grave goods of ceramic vessels and items of adornment similar to contemporary tomb furnishings at Marlik (Sołtysiak and Mahfroozi 2008; Piller and Mahfroozi 2009; Piller 2012c). Humped bull or zebu figurines are common at the site and there is an unusually detailed rendition in baked clay of a horse with trappings (Figure 11.45). Iron Age I burials have also been excavated at the cemetery site of **Shahne Poshte** in Mazandaran province, with grave goods of ceramics, beads and bronze weapons (Figure 11.46) (Sołtysiak *et al.* 2019a) as well as traces of wattle and daub architecture. Petroglyphs depicting wild goat and bovids at the site of **Jorbat** in western Khorasan and other sites of north-eastern Iran appear to date to the Late Bronze and Iron Ages and may relate to hunting activities in this fertile region (Vahdati 2011).

Figure 11.41 Marlik, gold beaker from grave 26 (photo credit: courtesy Jebrael Nokandeh, National Museum of Iran).

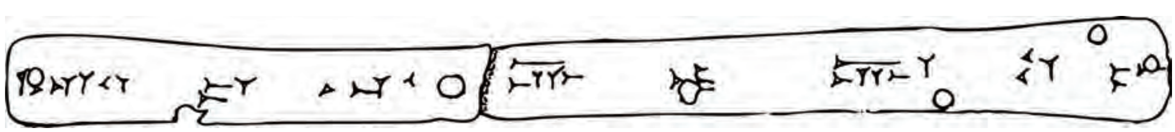


Figure 11.42 Toul-e Talish, bronze bracelet with Urartian inscription (Vahdati 2007: Figure 2) (image courtesy of Ali Vahdati).

In northern Khorasan and adjacent regions of north-eastern Iran, there is some evidence for continuity of human presence, if not in forms of ceramic production and social organisation, through the Late Bronze Age-Early Iron Age transition, with indications of a significant intrusion of, perhaps, peoples from south Central Asia at this time (Vahdati 2016; see Chapter 9). There appears to have been intensive Early Iron Age settlement of the Atrak river basin with sites showing connections both to south-eastern (Yaz I) and south-western Turkmenistan (Archaic Dehistan) (Figure 11.47) (Vahdati 2018: 55, Figure 14). Brief excavations at Tepe Yām in the Upper Atrak valley exposed materials of Yaz I type including typical coarse, handmade ceramics (Vahdati 2018: 55), while at Tappe Rivi excavated levels date back to the 10th century BC (Jafari and Thomalsky 2018).

Excavations at **Jayran Tepe** on the Esfarayen plain in the southern foothills of the Aladagh mountains uncovered human burials and a substantial circular mudbrick structure over an area of 470 m^2 with internal rooms and corridors (Figure 11.48) (Vahdati 2016: Figure 3, 2018). One room contained a platform with traces of ash and fire across its surface. The excavator, Ali Vahdati, interprets the structure as a fortified citadel comparable to Early Iron Age examples from sites in south Central Asia. Pottery from the site includes both the classic handmade Yaz I types of south-eastern Turkmenistan and the wheel-turned polished grey ware of so-called Archaic Dehistan type characteristic of Early Iron Age sites in south-western Turkmenistan. These intriguing discoveries suggest considerable cultural connectivity of this region of Iran at the shadowy Late Bronze Age-Early Iron Age transition. They also hint at the possibility that incoming communities from the east brought with them not

Figure 11.43 Kelardasht, selected objects from the Kelardasht Treasure (Samadi 1959: Figures 4–5, 7, 11–13; Nokandeh 2017: Figure 47) (photo credit: courtesy Jebrael Nokandeh, National Museum of Iran).

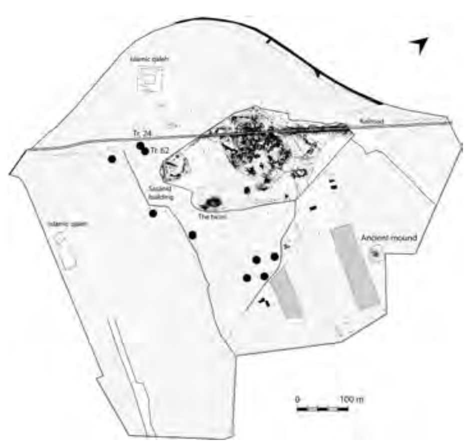


Figure 11.44 Tepe Hissar, location of trenches with Iron Age material (after Roustaei 2010a: Figure 28).

only unfamiliar, sometimes more basic, ceramic technologies but also the notion and practice of a new way of structuring local societies, with elite ruling groups living in large fortified residences constructed atop natural eminences, as at Jayran Tepe, and controlling the production and storage of local agricultural activity.

Well to the west across the central plateau (Table 11.1), the Qazvin plain is one of the more fertile expanses of arable land in northern Iran, as we have seen. Survey and excavations there have suggested an occupation hiatus of up to 500 years preceding a modest Iron Age presence (Negahban 1977), including rare architectural remains and richly furnished human burials at **Qara Tappeh** (Dehpahlavan *et al.* 2019) (Figure 11.49), **Sagzabad** (Malek

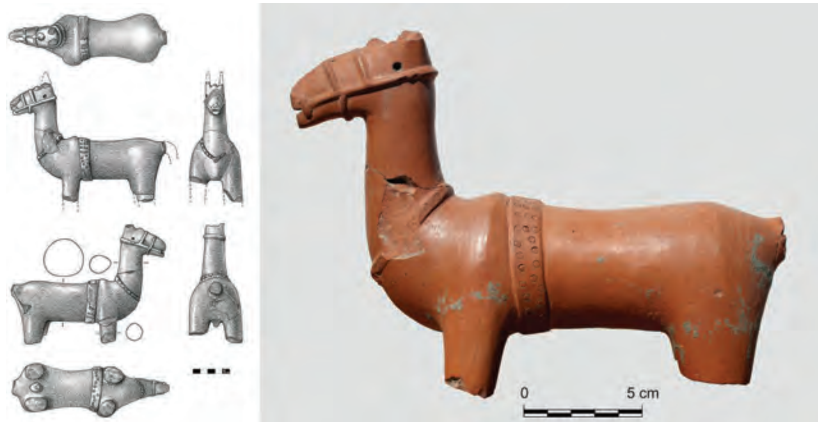


Figure 11.45 Gohar Tappe, horse figurine (Piller and Mahfroozi 2009: Figure 25) (images courtesy of Ali Mahfroozi and Christian Piller).

Figure 11.46 Shahne Poshte, Iron Age I burials (Sołtysiak *et al.* 2019a: Figures 1–2) (images courtesy of Hassan Fazeli Nashli).

Figure 11.47 North-eastern Iran and its neighbours in the Early Iron Age (adapted from Vahdati 2018: Figure 14) (image courtesy of Ali Vahdati).

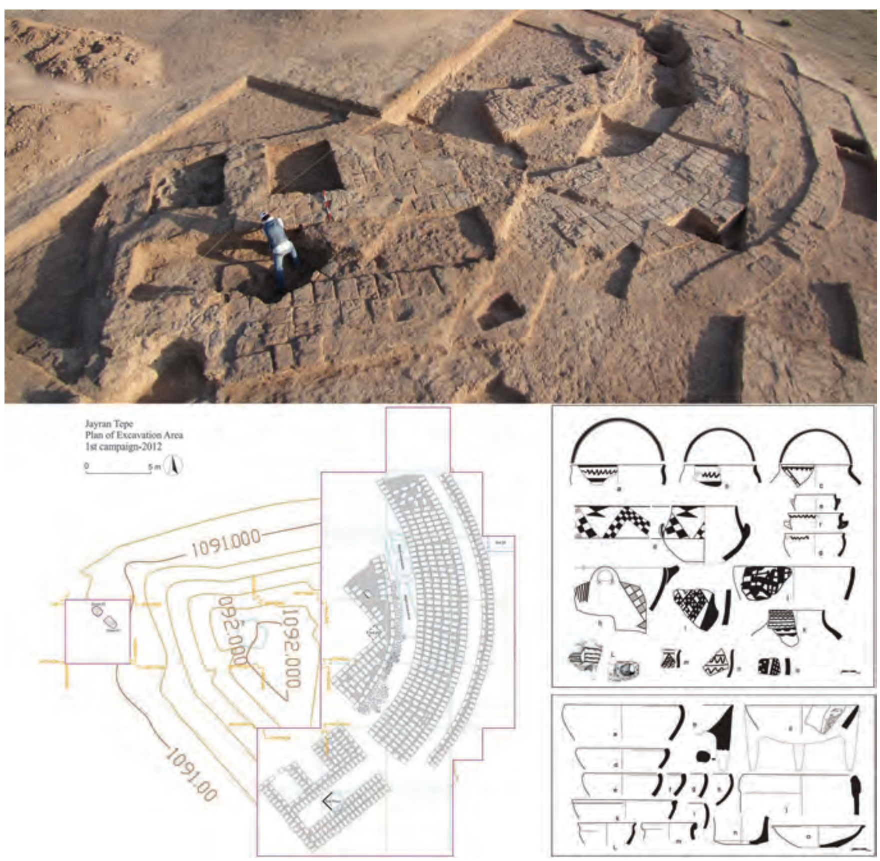


Figure 11.48 Jayran Tepe, circular mudbrick structure and ceramics of Early Iron Age (Vahdati 2016: Figures 3–5, pl. 4) (images courtesy of Ali Vahdati).

Shahmirzadi 1977; Tala'i 1983a), and Iron Age graves at nearby **Tepe Ghabristan** (Majidzadeh 1977; Malekzadeh 1977) where females were buried on their left and males on their right sides accompanied by ceramic vessels and strings of beads. Survey along the southern reaches of the Qazvin plain hints at a degree of settlement continuity from Bronze Age to Iron Age in this region but needs further investigation (Tahan and Naghshineh 2016). Synthetic analysis of the faunal remains from excavations on the Qazvin plain demonstrates a significant increase in hunting of wild equids and boar alongside increased herding of cattle in the Iron Age levels at Sagzabad in contrast to the Chalcolithic and Bronze Age emphasis on herding sheep and goat (Mashkour *et al.* 1999; Mashkour and Mohaseb 2017). Metal objects from Iron Age I–II levels at Sagzabad were manufactured from a range of copper alloys, including unalloyed copper, arsenical copper and tin bronze, suggesting selection of alloys to achieve specific decorative effects (Mortazavi *et al.* 2011).

Due west of Tehran on the Savajbulaq plain, excavations at the four mounds of **Khorvin** investigated an Iron Age cemetery without any clear settlement or architectural associations and with relatively impoverished metal grave goods (Hakemi 1950; Vanden Berghe 1964). Significant numbers of Iron Age sites have been located by survey across the Savajbulaq plain (Kleiss 1997; Mousavi 2005b). Excavations at **Tepe Mushalan** and **Tepe Mohammadabad** have recovered grey wares and burnished dark wares of late second millennium BC date (Hakemi 1949; Tala'i 1983a; Mousavi 2005b). The most important site of this region is **Tepe Ozbaki** where the uppermost excavated remains are of Late Iron Age or Median date constructed above earlier Iron Age levels, including a cemetery of at least 25 burials with ceramic grave goods (see below; Majidzadeh 2001).

On the Tehran plain itself, there are several important Iron Age sites including the extensive cemetery at **Qeytariyeh** now in the northern suburbs of Tehran city (Kambakhsh Fard 1969, 1991; Curtis 1987; Mousavi 2001), where excavations uncovered 350 pit graves, some possibly lined with wood, containing large quantities of Early Iron Age wheel-made burnished grey ware (Figure 11.50), with no trace of associated settlement or architecture. In about 10% of the graves there were also depositions of metal objects, principally bronze knives and daggers. Early Iron Age materials were also excavated at the sites of **Qara Tepe** and **Barlekin Tepe** on the Shahryar plain, west of Tehran (Burton-Brown 1962, 1979, 1981) and at **Kahrizak** south of Tehran where kilns for local production of grey-ware vessels were excavated (Kambakhsh Fard 1991: 144). At the southern extremity of modern Tehran, the sites of **Rayy** and **Qaleh Mortezagird** also yielded evidence of Early Iron Age occupation in the form of burnished grey wares (Schmidt 1936). Adjoining the Tehran plain to the south, the Varamin plain hosted a modest Iron Age presence. Survey of the two plains detected only two sites of obvious Iron Age date, including a cemetery with grey ware, burnished and incised ceramics adjacent to the mound of **Tepe Pardis** (Fazeli *et al.* 2007: 271–272), with burials of cattle and horse of mid-second millennium BC date.

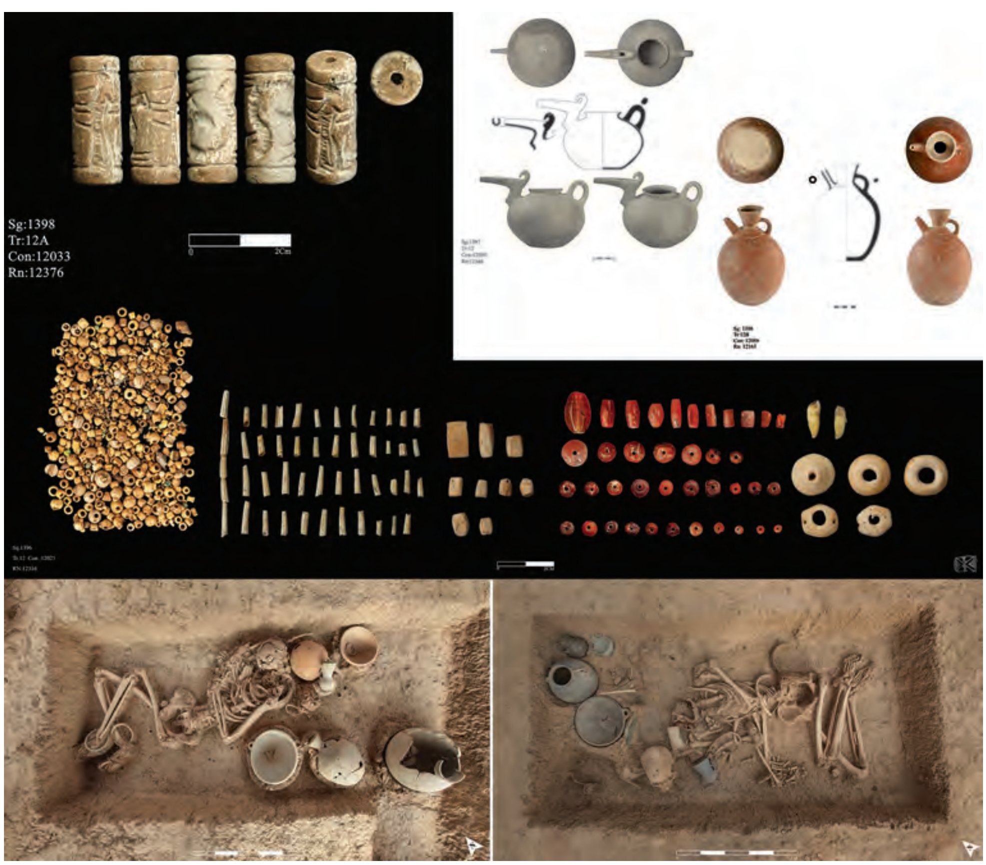


Figure 11.49 Qara Tappeh, selected Iron Age burials and grave goods (images courtesy of Mostafa Dehpahlavan).

Iron Age occupation has also been documented at nearby **Pishva** including mudbrick-lined tombs (Tehrani Moghaddam 1996). Significant architectural remains including multiple plastered floors have been excavated at **Tepe Ma'murin**, 40 km south of Tehran, with ceramics of Iron Age I–II date (Mehrekian 1996).

Looking southwards along the Zagros eastern flanks, Late Bronze Age and Iron Age remains have been revealed at **Qoli Darvish** near Qom including Iron Age houses, rooms with large grain storage vessels, metal-working areas, clay sealings with cylinder seal impressions and a mudbrick platform 30 × 3 × 10 m in dimensions with deposits of pottery and bronze objects set into the mudbrick structure (Figure 11.51) (Sarlak and Malekzadeh 2005; Sarlak 2011; Sarlak and Hessari 2018). Large quantities of animal bones associated with a fireplace on the platform likely originate from offerings or sacred feasts held on this unusual structure. Human and animal figurines, clay tokens and seals are also associated with this probable shrine, all of which underlines the importance of Qoli Darvish as a regional centre in the later second millennium BC. Although now badly damaged by agricultural and construction activities, it is estimated that Qoli Darvish at its peak may have extended over an area of up to 100 ha.

A remarkable decorated brick depicting a horse (?)-drawn, manned chariot (Figure 11.52) comes from the strategically located site of **Shamshirgah** 20 km southeast of Qom (Figure 11.53) (Kleiss 1983; Malekzadeh and Naseri 2005, 2013; Fahimi 2010), and bears comparison with similarly decorated bricks from Sialk and Qoli Darvish, which may signify Median influence (see below). Excavations at Shamshirgah have revealed massive mudbrick and stone walls of Iron Age II date, 1200–800 BC, and other traces of a large-scale fortified site situated between two limestone ridges. Faunal remains show a focus on sheep and goat herding, with some cattle and possibly domesticated pig (Figure 11.54) (Mashkour 2006b; Mashkour and Fahimi 2019). Close to Shamshirgah sits the cemetery site of **Sarm**, where burials span the Late Bronze Age and Iron Age I–II (Fahimi 2010; Mucheshi and Tala'i 2012; Hosseinzadeh *et al.* 2018; Kavoosi and Sarlak 2019).

Iron Age occupation is also attested on the Kashan plain, as at Sialk levels V–VII (Ghirshman 1939; Fahimi 2013) and the cemetery site of **Estark-Joshaqan** where excavated burials appear to span much of the second and early first millennia BC (Figure 11.55) (Sołtysiak *et al.* 2016a; Hosseinzadeh *et al.* 2017; Szymczak *et al.* 2018). The **Sialk** V Cemetery A lacks any association with evidence for a contemporary settlement, a not uncommon attribute of Iron Age sites across Iran, while the Sialk VI *grande construction*, an impressive mudbrick platform probably faced with decorated bricks (Chegini 2002), appears to be associated in some way with Cemetery B at Sialk with >200 burials in gable-roofed tombs (Ghirshman 1939: 23–25; Medvedskaya 2015; Fazeli Nashli and Nokandeh 2019). The Sialk VI platform compares well in scale with the structure at Qoli Darvish near Qom, which appears to be significantly earlier in date. Cylinder and stamp seals from Cemetery B are comparable to some of the examples from Marlik well to the northwest, although generally later in date. The painted pottery of Sialk VI (Figure 11.56) includes geometric designs as well as animals such as goat, ibex and horse painted on beak-spouted vessels, distinctively different from the unpainted burnished grey wares of the Early Iron Age prior to 800 BC that appear to develop from local Bronze Age ceramic traditions (Fahimi 2013). Bridge-spouted vessels from Sialk are a distinctive Iron Age II type attested at several sites across Iran, including Tepe Yahya, and

Figure 11.50 Qeytariyah, burnished grey-ware vessels from graves (photo credit: Neda Tehrani, Baloot Noghrei Inst., courtesy of the National Museum of Iran).

Figure 11.51 Qoli Darvish, Iron Age rooms with storage vessels (after Fahimi 2019: Figure 4).

Figure 11.52 Shamshirgah, decorated brick (Malekzadeh and Naseri 2013: Figure 5) (image courtesy of Reza Naseri).

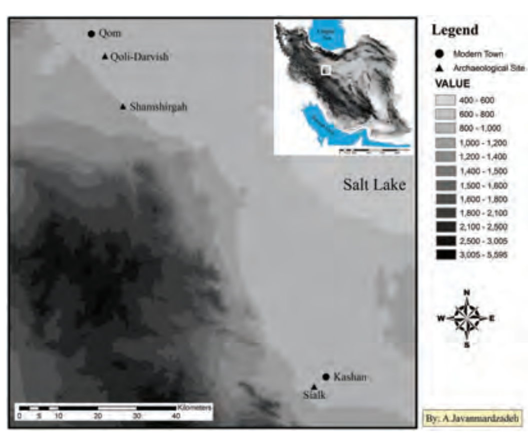


Figure 11.53 Map to show location of Qom, Qoli Darvish, Shamshirgah and Sialk (Malekzadeh and Naseri 2013: Figure 1) (image courtesy of Reza Naseri).

across the Persian Gulf in eastern Arabia where they appear to have formed one component of a cosmopolitan elite repertoire (Magee 1997, 2005b).

Also distinctive in the material culture of the Early Iron Age communities of the Central Plateau is the use of cylinder seals to impress on storage vessels, before firing, figurative designs of humans and animals engaged in

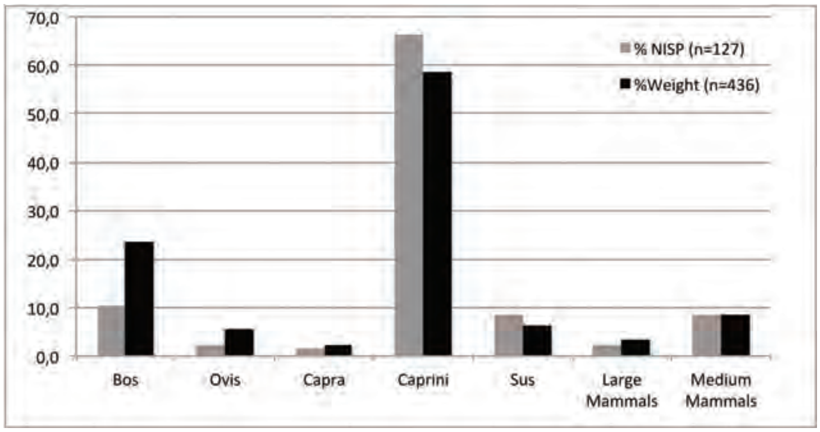


Figure 11.54 Shamshirgah, faunal remains by NISP and weight (after Mashkour and Fahimi 2019: Figure 6).

Figure 11.55 Estark-Joshaqan, burials and grave goods (photo credit: Javad Hossainzadeh, courtesy of Hassan Fazeli Nashli)

agricultural activities such as ploughing (Figure 11.57). Examples of this practice are known from Tepe Golestan, Tepe Sofali-Ma'murin, Qoli Darvish, Sagzabad and Tepe Sialk and, along with evidence for clay tokens at least at Qoli Darvish, may attest some form of economic management at these sites during the Iron Age I period (Alibaigi and Khosravi 2014).

Surveys in the Arisman region suggest an *apparent* absence of human settlement on the Iranian Plateau proper for the entire period from *c.* 2900/2800 BC (the end of the Proto-Elamite horizon) until the late second millennium BC, an astonishing hiatus of some 1,500 years (Helwing *et al.* 2011: 425). To what extent this apparent hiatus is

Figure 11.56 Tepe Sialk, Cemetery B painted Iron Age ceramics (Fazeli Nashli and Nokandeh 2019: Figures 2.28–2.30) (images courtesy of the National Museum of Iran).

an impact of later sedimentation burying possible Bronze Age sites is not clear (Brookes *et al.* 1982; Schmidt and Fazeli 2007; Schmidt *et al.* 2011), but there does appear to be at least a major reorientation of settlement through the Bronze Age of the plateau, possibly including significant abandonment and/or a switch from settled farming to seasonal transhumance or a low-level combination of both. Radiocarbon dates, ceramics and architecture from **Qoli Darvish** do, however, suggest a significant Late Bronze Age presence at this location at least (Sarlak 2011: 364).

As elsewhere in northern and central Iran, the Iron Age of the Arisman region is announced by the spread of the distinctive grey-ware ceramics that have been too readily associated with migrations from the north. Iron Age settlements in the Arisman region are few in number but indicate a preference for protected, secure locations, with cemeteries (only discovered through traces of their looting) and slag heaps from metalworking (Helwing *et al.* 2011: 430). Most significant in the Arisman survey is the suite of Iron Age II/III sites at **Milājerd 1–5** (Helwing *et al.* 2011: 426). The site Milājerd 4 consists of a substantial cemetery of Iron Age II date, looted following its exposure by pipe-line excavation (Fahimi 2011). A total of 93 looted pit graves were recorded, with grey-ware sherds common in the looters' spoil heaps and many whole grey-ware vessels, as well as bronze blades, pins and discs, amongst the materials confiscated by Natanz police from arrested looters. Many of the pots have intriguing incised pot-marks on the body or base of vessels (Fahimi 2011: Figure 15). The Milājerd 4 ceramics

Figure 11.57 Tepe Golestan, sherd with seal impression depicting ploughing scene (Alibaigi and Khosravi 2014: Figures 4–5) (images courtesy of Sajjad Alibaigi).

and metalwork compare well with excavated materials from other cemetery sites such as Sialk Cemetery A, Qeytariyeh, Khorvin and Sarm, as well as with Marlik and Kaluraz and even with materials from north-western Iran at Hasanlu and Dinkha II, indicative of widespread connectivity across central and northern Iran at this time.

To summarise the Iron Age of northern and central Iran, we begin by emphasising the very partial nature of the evidence. The Iron Age has only recently become a focus of archaeological investigations across the region (Fahimi 2013), and its image has suffered from contentious associations between ceramic assemblages and ethnicity, with the "sudden" appearance of grey wares taken as representing the migration into and across Iran of Iranian-speaking peoples (see above; Mousavi 2013a: 400). With the exception of certain fertile valleys and plains of the region, such as the Qom plain (Sarlak and Hessari 2018), there is a significant hiatus in *attested* human settlement across central Iran, at least, that precedes the first Iron Age presence in the last quarter of the second millennium BC, but the possible causes of this apparent hiatus are as yet unclear. Climatic impacts cannot be ruled out, with the onset of a wetter, cooler period from 950/900 BC (Neumann and Parpola 1987: 175; Kaniewski *et al.* 2019) encouraging Iron Age settlement, but more evidence is needed. Suggestions of an Iron Age increase in cattle herding (Mashkour *et al.* 1999), alongside the rich iconographic evidence for zebu cattle as attested at Marlik and other sites (Negahban 1996: pls. 42–44), might fit the picture of a dry and challenging environment given the superior resilience of zebu, as against taurine, cattle to more arid conditions (Matthews 2002a).

Difficulties in distinguishing unpainted Iron Age ceramics may be a contributing issue to the apparent shortage of settlement sites (Medvedskaya 1982). In any case, Iron Age settlement of the region can be defined as sparse and scattered, with small-scale settlements and occasional hill-top sites situated amongst a mosaic of quite richly furnished cemeteries. As with Luristan (see below), we have far more cemetery sites, almost always discovered through having been looted, than we do settlement sites. We lack even a basic understanding of settlement layout, neighbourhoods and use of space as regards the internal dynamics of Iron Age sites in this region. The large multi-period mound of Qoli Darvish near Qom appears to be the most promising site for addressing many of these issues (Sarlak 2011).

Iron Age tomb types (Cinquabre 1978; Negahban 1996: 13–24) and grave goods from the cemeteries, in the form of ceramics, metalwork and imported materials such as carnelian and cylinder seals, all suggest advanced skills in craftworking and a steady level of transregional networking, however indirectly, that kept the Iron Age communities of northern and central Iran engaged with each other and with the world at large, including connections with Anatolia, the Levant, Mesopotamia and Transcaucasia (Negahban 1996: map 6; Abdi 2010). These networks formed a basic framework of cohesion and community that would come to underpin the dramatic globalising developments that swept across all of Iran, and well beyond in the second half of the first millennium BC.

Luristan in the Iron Age, 1250–600 BC

In Chapter 8 we studied how Bronze Age human settlement in the region of Luristan might be characterised as low-key and small-scale, with a focus on burial of the dead in often long-lasting cemeteries attesting extensive access to and use of metals, tin and copper in particular, as well as widespread networks of material and social interaction. We also discussed the possibility that there may have been a significant element of mobile pastoralism to the economic basis of societies in this region, even if the evidence for full-scale nomadism is not convincing till much later (Potts 2014; Balatti 2017). Can we trace threads of continuity of these settlement and economic patterns from the Bronze Age into the Iron Age as we turn our focus once more onto Luristan (Figure 11.58; Table 11.2)? One element of continuity that sadly we can trace is that of extensive looting of these often remote cemetery sites (Figure 11.59) (Hasanpur *et al.* 2015: pl. 3), an affliction that has devastated the Iron Age as much as the Bronze Age evidence of the region.

Firstly, as with other areas of Iran, we note that the onset of the Iron Age as defined archaeologically does not mean a sudden and complete switch from bronze to iron as the dominant metal for tools, weapons and adornments at the very start of the Iron Age. Nevertheless, the onset of the Iron Age at *c.* 1250 BC is marked by significant developments in the material culture of Luristan that serve to distinguish the period from the preceding Bronze Age, including an increased sophistication and elaboration of metal objects often featuring complex combinations of human, animal and mythological creatures (Figure 11.60) (Overlaet 2005, 2013; Oudbashi 2019). These developments were the product of an advanced metal-working technology, including the use of hammering, engraving, lost-wax and casting (Moorey 1969), with an increasing representation of iron as against bronze through the course of the Iron Age (Fleming *et al.* 2005). It is to this period that most of the classic Luristan bronzes belong, defined by Muscarella as "canonical Luristan bronzes" (Muscarella 1988; Overlaet 2006a, 2006b, 2008, 2013).

Detailed diachronic analysis by Overlaet (2005, 2013: 384–389), building on earlier work by Moorey (1967 1969, 1971a, 1971b, 1982, 1991, 1999; see also Calmeyer 1969; Rehder 1991), traces a clear development in the

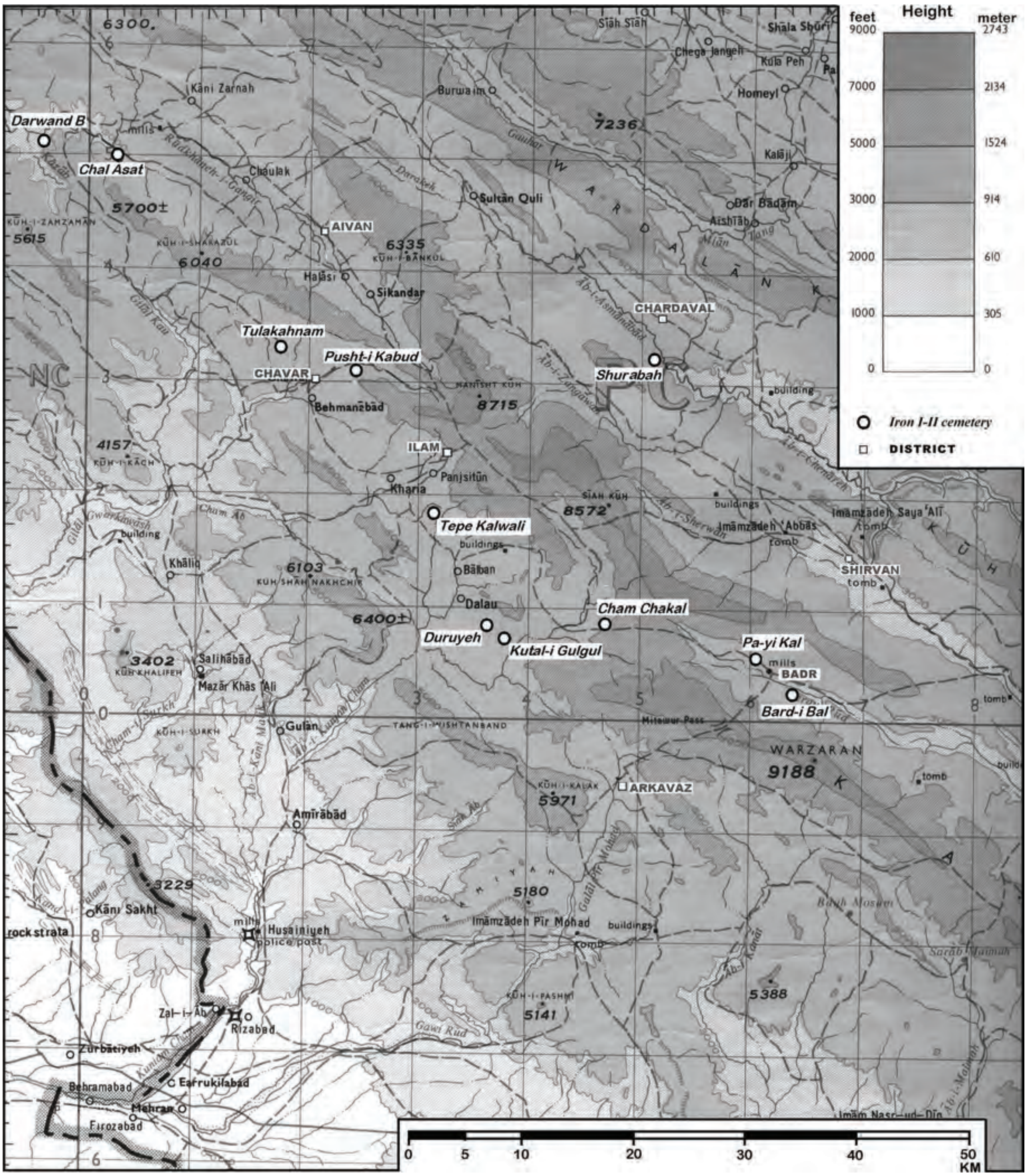


Figure 11.58 Map of Iron Age I-II cemetery sites in Luristan (Overlaet 2005: Figures 1–2) (images courtesy of Bruno Overlaet).

Luristan bronzes from simple and naturalistic to complex and often fantastical iconographies through the course of the Iron Age. Typical objects include horse-bits, cheek-pieces, weapons such as spiked axe-heads, halberds, swords, daggers and whetstone handles, "idols" in the form of finials or standards plus a range of jewellery. The whole issue of the Luristan bronzes is clouded by the fact that much of our knowledge of the material culture relies on unprovenanced objects acquired by western museums in less than ideal circumstances, with the high prices encouraging both illicit excavations and an active market in forgeries (Potratz 1963; Muscarella 1988; Overlaet 2006a, 2006b). As forcefully articulated by Muscarella (1988: 40):

> Essentially, what we have at present are the thousands of exotic and varied bronzes, the hundreds of burials, and many questions. After fifty years of study it is not yet possible to summon to life the people of ancient Luristan.

Table 11.2 Comparative chronology of Luristan Pusht-i Kuh and neighbouring regions (after Overlaet 2005: Figure 3)

BC	Pusht-i Kuh	NW Iran (Dyson 1989)	Elam	Mesopotamia	
				Assyria	Babylonia
1400	Late Bronze Age	Iron I Hasanlu V	Middle Elamite period Ige Halki 1400-1380 Untash-Napirisha 1340-1300	Mittani period Middle Assyrian period	Kassite period Burnaburiash I 1359-1333 Kurigalzu II 1332-1308
1300				Adad-Nirare I 1305-1274 Salmanasar I 1273-1244 Tukulti-Ninurta I 1243-1207	Kudur-Ellil 1254-1246 Shagarakti-Shuriash 1245-1233 Kastiliash IV 1232-1225
1200	Iron IA	Has. IVC	Shutruk-Nahhunte 1190-1155 Kutir-Nahhunte 1155-1150 Shilhak-Inshushinak 1150-1120	Assur-Dan I 1178-1133	Enlil-nadin-ahhe 1156-1154 2nd Isin dynasty
1100	Iron IB			Tiglat-Pileser I 1114-1076	Nebudchadnezzar I 1125-1104 Marduk-nadian-ahhe 1099-1082
1000	Iron IIA	Iron II			Nabu-Mukin-apli
900	Iron IIB	Has. IVB	Neo-Elamite period	Neo-Assyrian period Assurnasipal II 883-859 Salmanasar III 858-824	Neo-Babylonian period
800		Has. IVA		Adad-Nirare III 810-783 Tiglath-Pileser III 744-727	
700	Iron III	Has. IIIB Iron III	Shutruk-Nahhunte II 716-699	Sargon II 721-705 Sennacherib 704-681 Esarhaddon 680-669 Assurbanipal 668-627	
600					Neo-Babylonian dynasty

As to sources of metal for the countless objects found in the Iron Age cemeteries of Luristan, the tin-copper mines of Deh Hosein, 200 km west of Veshnaveh, are the likeliest candidate as excavations have revealed structures and materials dating to the Iron Age (Nezafati *et al.* 2009).

Figure 11.59 Baba Jilan graveyard showing illegal (top) and legal (bottom) excavations (Hasanpur *et al.* 2015: pl. 3) (images courtesy of Ata Hasanpur).

Secondly, the Bronze Age to Iron Age transition in Luristan, as in most other regions of Iran and beyond, is marked by a significant episode of regional abandonment with no identified Late Bronze Age-Early Iron Age settlements in either the Pusht-e Kuh or Pish-e Kuh and a cessation or significant reduction of settlement at key sites such as Tepe Guran, Baba Jan, Djamshidi and Girairan (Goff Meade 1968; Goff 1971, 1976; Schmidt *et al.* 1989; Thrane 2001; Haerinck *et al.* 2004: 133; Overlaet 2003, 2013: 379–380). In the Kangavar valley to the east, small-scale settlement moved from the plains to the hills, perhaps indicative of an increased emphasis on herding (Young 2002: 424–426). It is as yet unclear to what extent these shifts in settlement densities and locations might have been impacted by climate change otherwise attested through the Late Bronze Age-Early Iron Age transition, including severe fluctuations in precipitation, as discussed above (Neumann and Parpola 1987; Sinha *et al.* 2019).

Thirdly, as with the Bronze Age, the majority of our knowledge of Iron Age Luristan comes from mortuary evidence. Burial in cemeteries located on gentle hill slopes continues unabated in the Iron Age. In Iron Age IA (1250–1150 BC) cist tombs are used and reused in cemeteries in the Pusht-e Kuh, at sites such as **Ilam**, **Bard-i Bal** and **Kutal-i Gulgul** (Haerinck and Overlaet 2010b). Kassite Mesopotamian influences are attested in the form of inlaid shell rings, ceramic vessels and miniature faience buckets (Overlaet 2005, 2013: 380). As elsewhere across Iran, the painted ceramics of the Bronze Age are replaced by ubiquitous plain wares. These tombs contain some of the earliest exemplars of the canonical Luristan style, including spike-butted axeheads and finials of opposed animals (Figure 11.61) (Overlaet 2013: Figure 18.1).

Iron Age IB-IIA (1150–950 BC) is marked by the end of Mesopotamian influence in the form of Kassite imports to the Pusht-e Kuh, following the destruction by the Elamite king Shutruk-Nahhunte of the Hamrin sites in *c.* 1160 BC (Chapter 10; Boehmer and Dämmer 1985: 80). There is significant evidence for long-term reuse of cist tombs with material and skeletal contents being pushed aside to make room for new additions, and an increasing representation of high-status iron objects such as pins, rings and bracelets, along with elaborate bronzes in the canonical Luristan style (Overlaet 2013: 380–381). In Iron Age IIB (950–800 BC), burials were more commonly

Figure 11.60 Luristan, canonical Luristan style bronze artefacts (Overlaet 2013: Figures 18.6–18.10) (images courtesy of Bruno Overlaet).

in small individual tombs while the trend of increasing use of iron continued, typified by an iron mask pommel sword and a bronze ring found at the cemetery site of **Baba Jilan** near Nurabad (Figure 11.62) (Hasanpur *et al.* 2015). Metal objects from this site were made of copper alloyed with tin at 3%–11%, comparable to alloys used across Luristan at this time (Oudbashi and Hasanpour 2018). Metallurgical analysis of extraordinary metal finds at the site of **Saruq al-Hadid** in Dubai, dated to *c.* 1250–800 BC and located hundreds of kilometres to the south-east across the Persian Gulf, has suggested the import to Dubai of iron from the Sanandaj-Sirjan metallogenic belt of western Iran, both in the form of iron ores and as finished artefacts (Stepanov *et al.* 2020), yielding critical insights into the interconnectivity of material and technological spheres of activity covering substantial distances.

A rare excavated settlement site in Luristan for Iron Age IIB (900–800 BC) and Iron Age III (800–650 BC) is **Baba Jan** in the Pish-e Kuh (Figure 11.63), a series of mounds with a large residential dwelling or

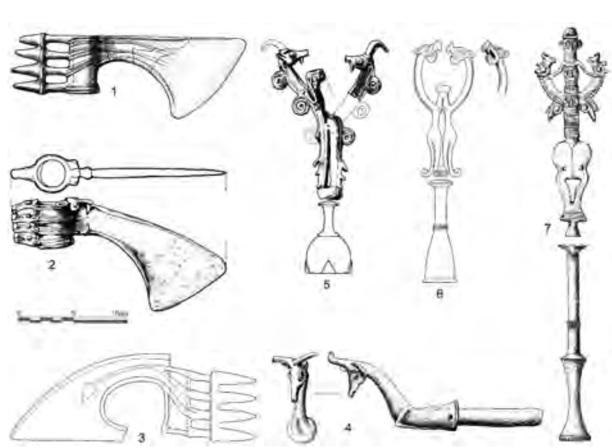


Figure 11.61 Luristan, selection of excavated bronze artefacts (Overlaet 2013: Figure 1) (images courtesy of Bruno Overlaet).

manor on the Central Mound, and a fort and decorated temple with *c.* 200 painted tiles on the East Mound (Goff Meade 1968; Goff 1969, 1970, 1977). In the Iron Age III phase, pottery at Baba Jan takes the form of distinctive painted wares, which are not found in association with canonical Luristan bronzes, suggesting that the inhabitants of Baba Jan may have been recent incomers to the region (Goff 1978: 35; Overlaet 2013: 383), and which are also suggestive of Median connections (see below). Overlying the fort and in some cases built directly on its wall stumps, the latest Iron Age levels at Baba Jan consisted of a series of residential dwellings terraced into the mound with the roofs of the lower buildings acting as courtyards for adjacent upper buildings, a tradition of community architecture still thriving in the Zagros today (Goff 1985). Level III at Baba Jan was destroyed by fire probably in the late 8th century BC while Level II was destroyed by the late 7th century BC. A single horse burial with bronze fittings was set into the abandoned manor on the Central Mound (Goff 1969: 123–126). The excavated settlement at Baba Jan provides valuable augmentation to the picture provided by the artefact-rich tombs of Luristan to the north, as neatly put by the excavator Clare Goff (1978: 40): "In eighth century Luristan not everyone was a warrior chief. Men tilled the field, kept animals, raised families and followed traditional crafts, exactly as they do in villages today."

Iron Age shrines of Luristan include the sites of Surkh Dum-e Luri and Sangtarashan, with stone architecture and so-called *favissae*, that is buried depositories of votive objects (Schmidt 1989; Overlaet 2012, 2013: 383). At **Surkh Dum-e Luri** a substantial Late Bronze Age building of unclear function (Chapter 8) was overlain by a

Figure 11.62 Baba Jilan, bronze ring with image of Ahura Mazda (Hasanpur *et al.* 2015: pl. 6) (images courtesy of Ata Hasanpur).

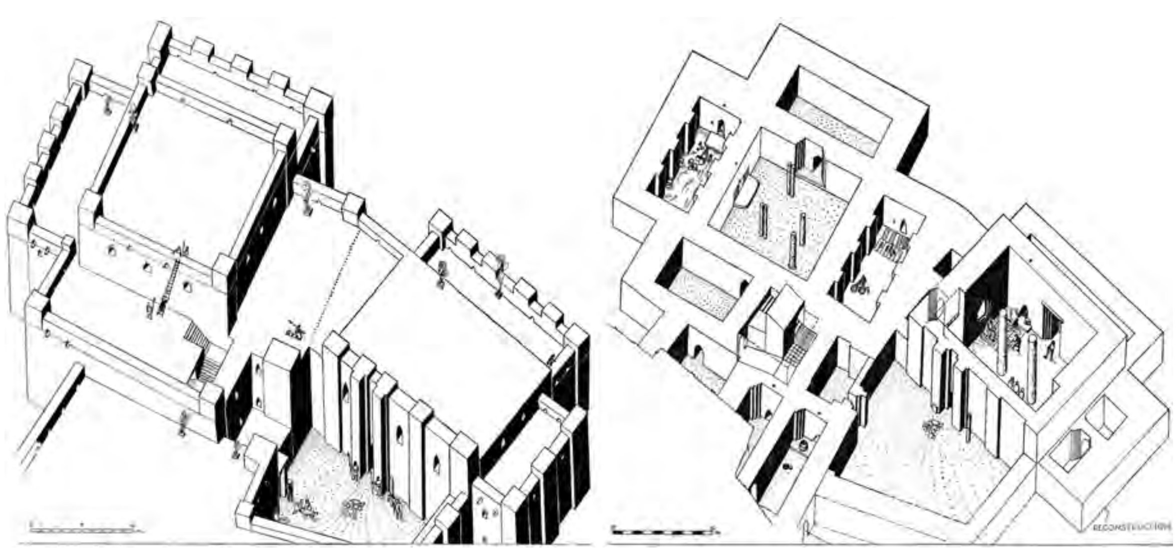


Figure 11.63 Baba Jan, isometric reconstructions of the level III fort and painted chamber (after Goff 1977: Figures 5–6).

multi-phased Iron Age shrine in the walls and floors of which there were rich deposits of objects including seals and jewellery, some of which date back to the Chalcolithic and Bronze Age. Of 200 seals found at the site, 125 had been incorporated into the building's walls and floors, most of them dating significantly earlier than the sanctuary itself (Figure 11.64) (Maras 2005: 136–138). An adjacent building contained quantities of Neo-Elamite faience vessels. The Surkh Dum-e Luri shrine, in use for *c.* 200 years until its abandonment in *c.* 650 BC, attests significant continuity of cultic practice amongst the inhabitants of the region.

At **Sangtarashan** the spectacular buried deposits include an astonishing array of tin-bronze vessels, bronze and iron weapons and canonical Luristan bronzes of Iron Age II-III date distributed over a large area of the site, with many stone and metal finds deposited in clusters within a sizable stone-walled enclosure that appears to have functioned as a sacred precinct (Figures 11.65–11.66) (Oudbashi *et al.* 2013; Malekzadeh *et al.* 2017; Hasanpur and Malekzadeh 2019). As to the nature of the religious framework and cultic activities associated with the *favissae* at Surkh Dum-e Luri and Sangtarashan our knowledge and understanding is extremely limited. Were the lavish deposits of metal weapons and vessels sets of offerings made to a local deity of the region, or were they each destined for future graves in the region that somehow never got deposited? We have no answer, or too many answers.

Luristan in Iron Age III (800–650 BC) is characterised by increased transregional connectivity, with grave goods imported from Mesopotamia to the west and Susa to the south, and increased numbers of rich graves and cemeteries in the Pusht-e Kuh such as **Karkhai**, **War Kabud** and **Chamahzi Mumah** (Vanden Berghe 1987; Haerinck and Overlaet 1998, 1999, 2004b; Overlaet 2005, 2013: 383; Wicks and Álvarez-Mon 2019). At War Kabud, 25 km northwest of Ilam, it is estimated that some 1,000 tombs had already been looted before Belgian archaeologists led by Louis Vanden Berghe commenced excavations there in 1965 (Figure 11.67) (Fleming *et al.* 2006: Figure 2). More than 200 undisturbed tombs were excavated by the Belgian team, yielding a wealth of remains of Iron Age III date. All the tombs are individual inhumations ranging from simple pit graves to cist tombs with stone walling and capping, with one possible example of a horse burial (though lacking a surviving horse skeleton). Grave goods comprise ceramic vessels, iron objects such as arrowheads, axes and swords, bronze items

Figure 11.64 Surkh Dum-e Luri, scenes from cylinder seals (after Maras 2005: Figures 2, 4–5).

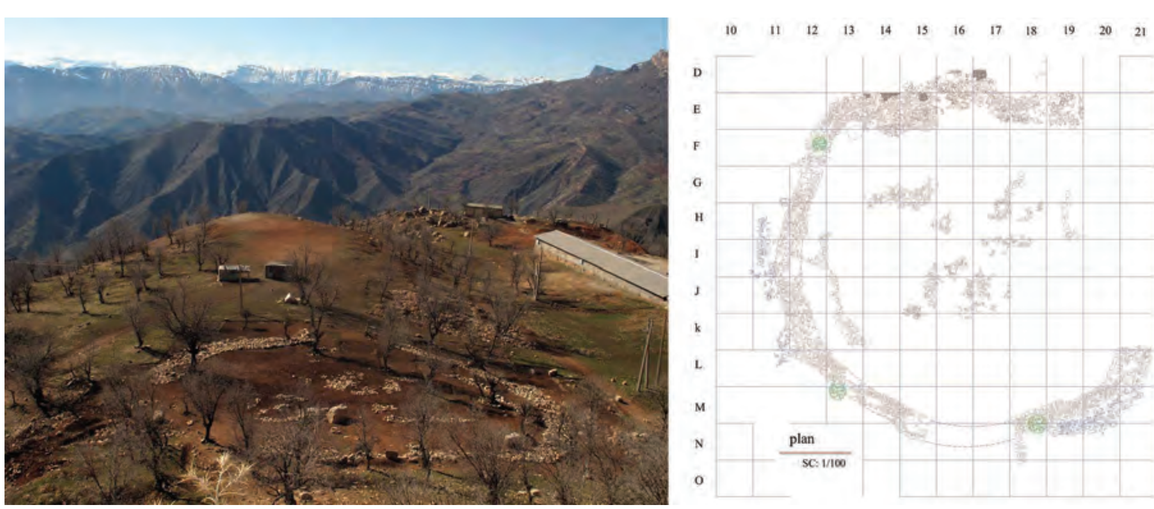


Figure 11.65 Sangtarashan, views and plan of stone structure (Hasanpur and Malekzadeh 2019: pl. 19, Figure 3) (images courtesy of Ata Hasanpur).

Figure 11.66 Sangtarashan, deposits of metal artefacts (Hasanpur and Malekzadeh 2019: pls 4–5, Figures 1–2) (images courtesy of Ata Hasanpur).

of jewellery such as rings, anklets and bracelets, bronze luxury vessels, and rare silver or gold fine items (Figure 11.68). The quality of the metal objects demonstrates a high level of skill and expertise amongst the Luristan metalworkers above all in the working of tin-bronze, possibly using ingots of bronze imported via Mesopotamia (Fleming *et al.* 2005, 2006) or more likely directly from the Deh Hosein sources on the eastern Zagros flanks (Nezafati *et al.* 2009).

Remarkable artefacts including bronze quivers decorated with figural scenes vividly illustrate the wide geographical range of influences at play on the art of Luristan at this time (Moorey 1975). Iron was increasingly used for weapons as against items of adornment, indicating its greater availability. Neo-Assyrian impact on the region is attested both through imported artefacts such as glazed vessels and the cutting of powerful rock reliefs at sites such as **Shikaft-e Gulgul** (Reade 1977), **Heydarabad-e Mishkas** (Alibaigi *et al.* 2012) and **Surkh Dum-e Laki** west of Khorramabad (Azarnoush and Helwing 2005: 221–222). A spectacular hoard of silver and gold vessels and human masks from the cave of **Kalmakarra** near Pol-e Dokhtar includes Neo-Elamite inscriptions naming a ruler of the "kingdom of Samati," probably in southern Luristan (Motamadi 1992; Vallat 1996; Henkelman 2003b; Balatti 2017: 143–147) although several items alleged to come from the Kalmakarra cave are clearly modern forgeries (Muscarella 2018: 89–92).

The overall impression of Luristan in the centuries prior to the rise of the Achaemenid empire is of a region episodically controlled by multiple small-scale rulers widely distributed across the valleys and peaks with the occasional

Figure 11.67 War Kabud, view of graveyard with illegal pits and Belgian Expedition excavations in 1966 (Fleming *et al.* 2006: Figure 2) (mage courtesy of Bruno Overlaet).

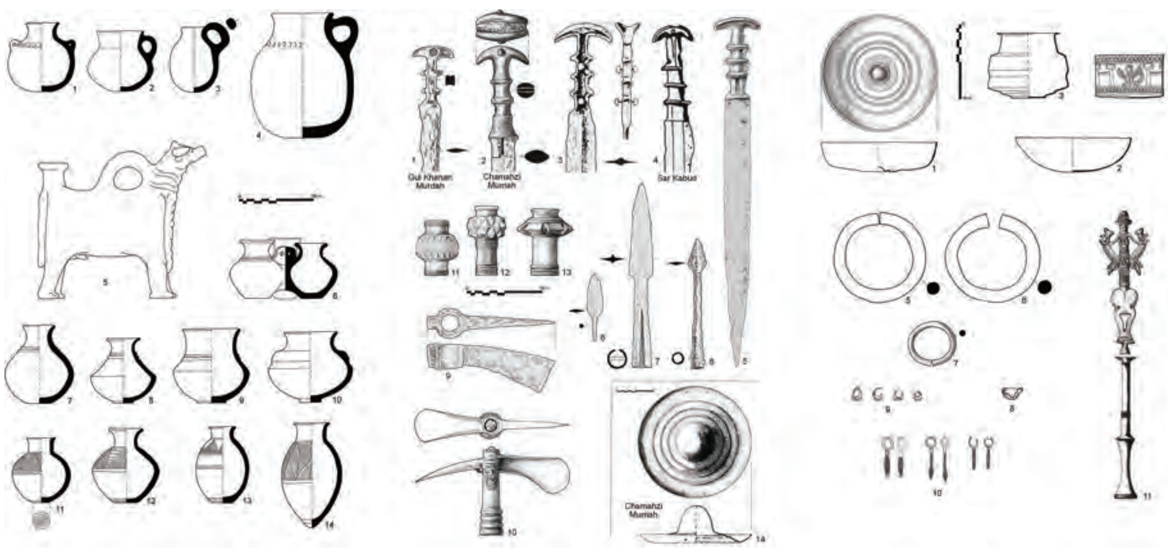


Figure 11.68 War Kabud, selected Iron Age III grave goods (Overlaet 2005: pls 12–14) (images courtesy of Bruno Overlaet).

rise to prominence of larger-scale political entities such as Ellipi whose rulers were referred to as "kings" by the Assyrians (Balatti 2017: 264–266). While the archaeological evidence relating to subsistence practices for this period is slight, the likelihood is that the peoples of Iron Age Luristan continued to pursue a mixed economy of farming along with village-based herding of sheep and goat, above all, and elements of longer-distance pastoral nomadism, which may have involved shepherds and flocks from Mesopotamia and Khuzestan moving in summer from their low plains to the Zagros heights and/or highland flocks descending to the foothills for the less severe winters, as arguably attested in Assyrian and later texts relating to the Zagros region (Balatti 2017: 276–283). The final stages of the transition to the age of the Achaemenid empire in this region are totally obscure (Overlaet 2013: 384).

The Neo-Elamite kingdom, 1000–539 BC

In Chapter 10 we examined the archaeology of the Elamite kingdom through the Bronze Age, concluding with the floruit of Elamite civilization at the time of Shutruk-Nahhunte and his successors of the 12th century BC, which culminated in the defeat of the last Shutrukid king, Hutelutush-Inshushinak, by the Babylonian king Nebuchadnezzar I in *c.* 1120 BC. For up to 300 years after this date the archaeological and historical evidence for the Elamite presence in south-western and southern Iran is virtually non-existent, with little to relate until the mid-8th century BC or later (Askari Chaverdi *et al.* 2010: 291; Álvarez-Mon 2013b; Waters 2013; Potts 2016: 249; Balatti 2017: 135–153; Gorris and Wicks 2018). Whether this hiatus in evidence relates to a genuine abandonment of the region, to a recourse to non-settled modes of living or to factors of geomorphological significance, or to a combination of all three, remains unclear but it is likely to be connected to a larger-scale transregional episode of disruption that impacted almost all of Iran and well beyond at the time of the Bronze Age-Iron Age transition. All these factors make it impossible to characterise with any certainty the extent and nature of the Elamite state throughout the first millennium BC, as articulated by Potts (2016: 249): "It is also likely that, under intense Assyrian pressure, Elam as it had existed in the Middle Elamite period was no longer a unified state comprising both the highlands of Fars and the lowlands of Khuzistan."

As we traverse the first half of the first millennium BC, we are increasingly able to draw upon historical records from inside and, especially, outside Elam to augment the scant archaeological record. Surviving records, including Babylonian chronicles and Assyrian royal annals and state correspondence, yield detailed information on conflict and diplomacy between the Neo-Elamite state and its contemporaries to the west in Mesopotamia (Figure 11.69) (Stolper 1992c; Potts 2005a, 2016; Balatti 2017). We possess significant onomastic evidence for the presence of Elamites and some Iranians in the cities of Babylonia prior to the Achaemenid conquest (Zadok 1976). Some of the texts feature otherwise unknown Elamite kings whose reigns were too short and turbulent for them to make any notable impact on the sequence of royal temple building programmes at Susa. But we do not propose here to provide a detailed history of Elam and its neighbours in the Neo-Elamite period both because of this book's archaeological focus and because excellent studies of this topic already exist (Stolper 1984b; de Miroschedji 1990; Potts 1999: 259–307, 2016: 249–306; Waters 2000, 2013; Henkelman 2003a; Tavernier 2004; Carter 2007; Álvarez-Mon and Garrison 2011; Vallat 2011b; Álvarez-Mon 2012; Dubovský 2018a; Gorris and Wicks 2018; Gorris 2020). In extreme brevity, Elam's history during the Neo-Elamite period is characterised by episodes of significant foreign engagement, principally with the resurgent Mesopotamian powers of Assyria and Babylonia to the west, marked by increased tension and military conflict culminating in the Assyrian sack of Susa

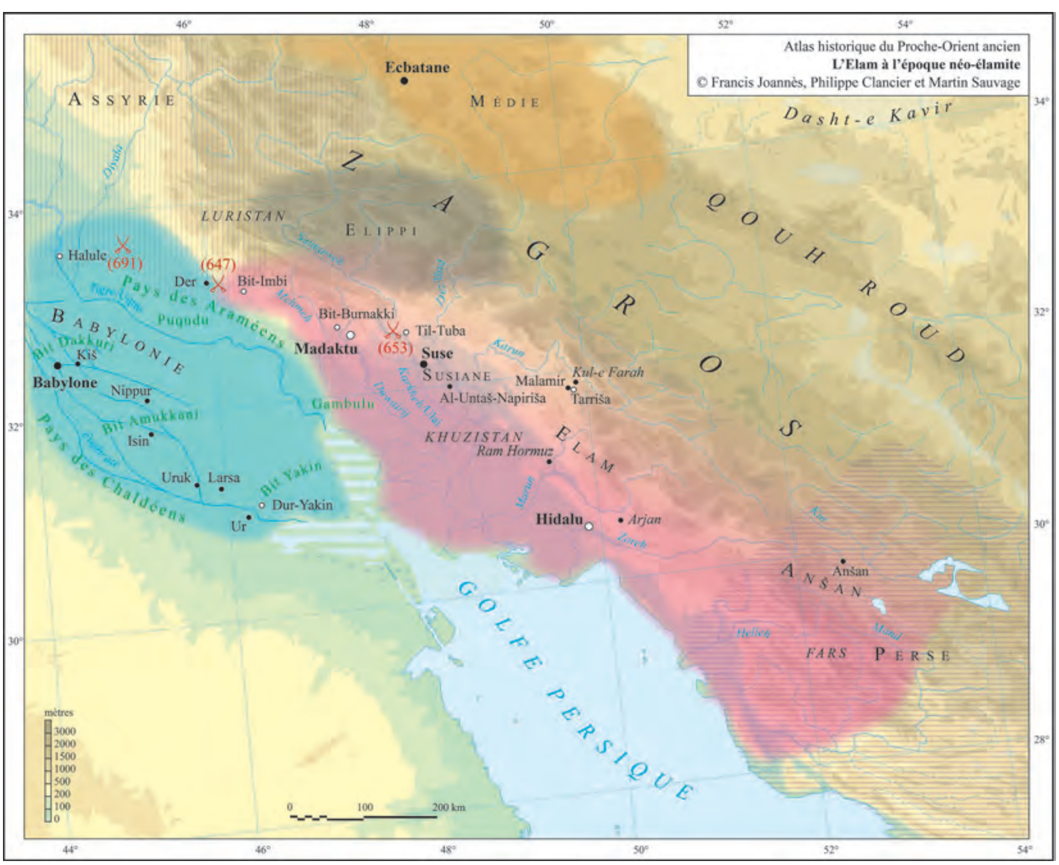


Figure 11.69 Map of Elam and Babylonia in the Neo-Elamite period (Sauvage 2020: 131) (image courtesy of Francis Joannès, Philippe Clancier and Martin Sauvage).

in 646 BC (Dubovský 2013), Babylonian control of Susa in 626 BC, the rise to power of the Medes and Persians, and a final floruit of Elam in the 6th century BC prior to its absorption into the Achaemenid empire where the cultural and linguistic identity of Elam continued to thrive.

For the archaeology of Neo-Elamite Elam, we turn once again to Susa and the Susiana plain where surveys have detected modest numbers of Neo-Elamite sites (de Miroschedji 1981c). Excavated information for the Neo-Elamite I phase (1000–730 BC) comes solely from **Susa** itself where trenches in the Ville Royale and the Apadana-Ville Royale uncovered mudbrick structures, pits and human burials, associated with Neo-Elamite I pottery (including the classic "Elamite goblet"), frit figurines and containers, and glazed vessels (Figure 11.70) (de Miroschedji 1981a, 1981b; Carter *et al.* 1992c; Álvarez-Mon 2013b: Figure 23.2; Gorris and Wicks 2018: 258–263). During the Neo-Elamite II phase (730–550 BC), evidence from Susa comprises a major funerary chamber in the Ville Royale containing six individuals and a rich assemblage of ceramic vessels, metal objects of iron and gold and a glazed faience cylinder seal depicting an archer hunting a lion-headed griffin (Figure 11.71) (de Miroschedji 1982; Álvarez-Mon 2013b: Figure 23.3, 2020: 392–293). Quantities of hairpins composed of iron shafts with ornamented gold leaf heads have been taken as indicative of important female burials. The ancient Susa tradition of intricate carving on objects made of locally available bituminous compound continues, epitomised in an exquisitely modelled scene featuring a high-status seated lady, fanned from behind by a standing servant, in the act of spinning (Figure 11.72) (Carter *et al.* 1992c: 200; Álvarez-Mon 2020: 427–430).

Also distinctive of the Neo-Elamite II phase at Susa are fine glazed objects such as wall plaques and pegs, brick panels, statuettes and a range of containers, all reflecting enhanced capabilities in faience technology and a lively iconography incorporating real and fantastical creatures in vivid colours (Carter *et al.* 1992c: 202–210; Álvarez-Mon 2010c, 2013b: 462, 2020: 398–423; Holakooei 2014). Fragments of blue-green glazed lions in naturalistic style are associated with a small temple of Inshushinak on the Acropole, which spans the Middle-Neo-Elamite periods. A limestone stele of king Atta-hamiti-Inshushinak found in the Acropole depicts the Elamite king and his queen in low relief, variously dated to between 650 and 520 BC (Figure 11.73) (Stolper 1992b; Álvarez-Mon 2013b: 464, 2020: 431–434; Potts 2016: 291). Some 300 Elamite tablets from the Susa Acropole date to the 7th or

Figure 11.70 Susa, Neo-Elamite I ceramics and vitreous wares (Álvarez-Mon 2013b: Figure 23.2) (image courtesy of Javier Álvarez-Mon).

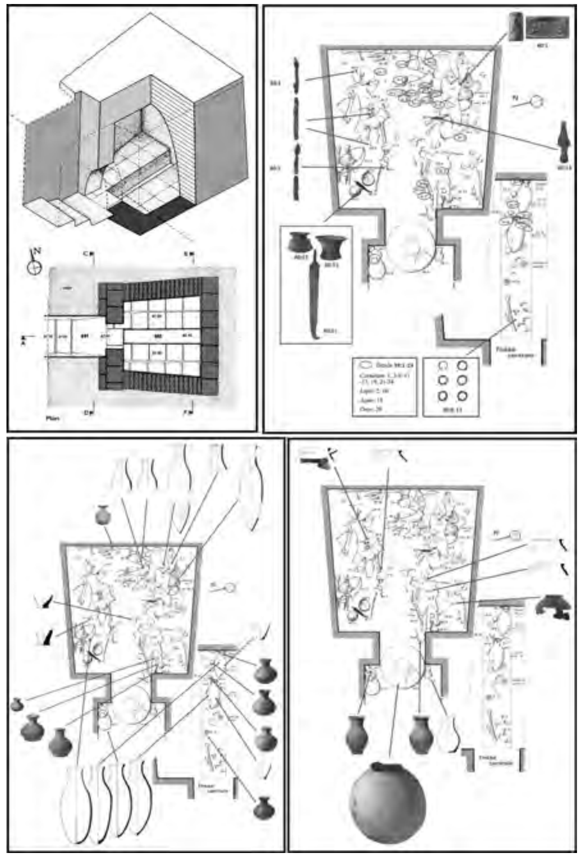


Figure 11.71 Susa, Ville Royal II, Tomb 693, 7th century BC (Álvarez-Mon 2020: pl. 166; after Wicks 2015: pls. 34, 36–38) (image courtesy of Javier Álvarez-Mon).

Figure 11.72 Susa, carved limestone and bitumen reliefs 8th–7th centuries BC (Álvarez-Mon 2020: pl. 190b) (image courtesy of Javier Álvarez-Mon).

early 6th century BC, with significant representation of Iranian names alongside Elamite names (Tavernier 2011, 2018a, 2018b; Boucharlat 2013a: 505; Potts 2016: 291–295). The tablets account for the movement of textiles, containers, weapons and tools, with at least 355 individuals involved as administrators or handlers of commodities, and in some respects can be seen as forerunners of the Elamite documents from Achaemenid Persepolis (Basello 2011). Glyptic evidence from Susa in the form of seals, generally made of bituminous compound or faience, and seal impressions on tablets shows a blend of Elamite and Assyrian elements that strongly influence later Achaemenid seal styles, as attested by numerous seal impressions on tablets from Persepolis (Amiet 1972, 1973a; Potts 2016: 294; Garrison 2018). A striking cylinder seal scene of animals, including a lion and a donkey, standing on their hind legs while playing musical instruments, including a harp, drum and pipes (Lawergren 2018: 789–790), brings to mind the Proto-Elamite practice some 2000 years earlier of depicting animals engaged in distinctly human activities.

Beyond Susa to the east, Neo-Elamite sites include the series of spectacular carved reliefs at **Kul-e Farah** in the Zagros range at Malamir 150 km northeast of Susa, which date to the Neo-Elamite period (Vanden Berghe 1963; De Waele 1981, 1989; Potts 1999: 253–254, 302–303, 2016: 296–300; Álvarez-Mon 2010b, 2010c, 2013b, 2015b, 2015c, 2017, 2018b: 620–622, 2019: 47–93, 2020: 366–368; Gorris and Wicks 2018: 263–265; Kawami 2018: 687–688). The Kul-e Farah reliefs may have been components of an outdoor sanctuary for celebrating festivals such as the New Year or Nawrouz, with animal sacrifices and musical processions (De Waele 1989; Seidl 1997). The relief Kul-e Farah III (Figures 11.74-11.75) depicts some 200 figures including a high-status male figure supported on a platform by kneeling males, with flocks of sheep and zebu cattle. Kul-e Farah IV portrays a massive communal banquet with 141 participants, presided over by a king and his court, including musicians (De Waele 1989; Henkelman and Khaksar 2015; Lawergren 2018: 792–794). At Kul-e Farah I there is a long inscription in Elamite cuneiform identifying the largest figure as Hanni, son a local prince who pays homage to the Elamite king Shutur-Nahhunte.

Further east in the Mamasani region of the southern Zagros, the open-air sanctuary site of **Kurangun** comprises rock reliefs spanning Old Elamite to Neo-Elamite (Chapter 10; Potts 2004b; Álvarez-Mon 2020: 368),

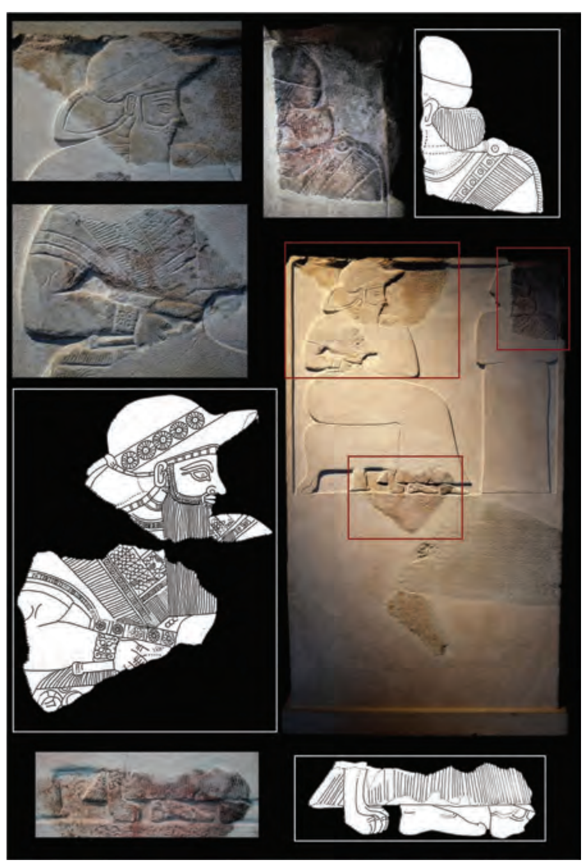


Figure 11.73 Susa, stela of Atta-hamiti-Inshushinak, 6th century BC (Álvarez-Mon 2020: pl. 192) (image courtesy of Javier Álvarez-Mon).

Figure 11.74 Kul-e Farah III, carved relief scene photo (Álvarez-Mon 2019: pl. 39) (image courtesy of Javier Álvarez-Mon).

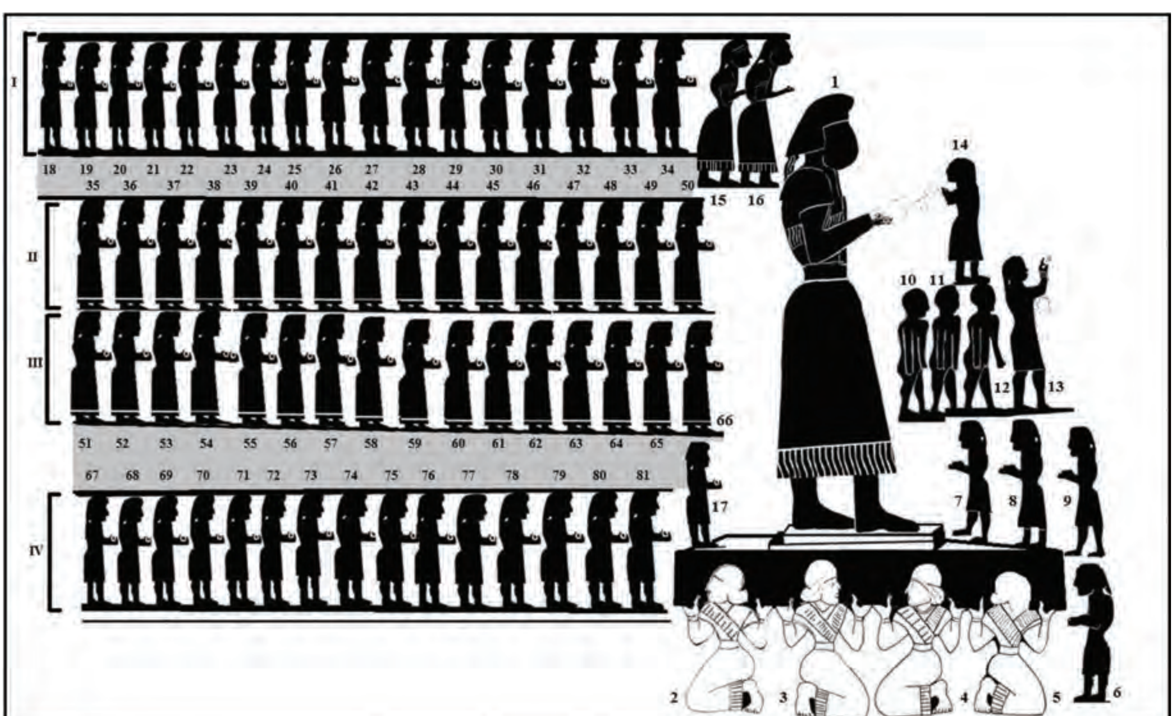


Figure 11.75 Kul-e Farah III, carved relief scene drawing (Álvarez-Mon 2019: pl. 39) (image courtesy of Javier Álvarez-Mon).

with depictions of figures similar to some of those at Kul-e Farah III and IV. These relief scenes, representing "a highland culture in all its glory" (Álvarez-Mon 2013: 231), attest significant Elamite presence and cultic activity in the upland Zagros east of Susa as well as serving as iconographic, ideological and stylistic precursors for the Achaemenid imperial relief sculpture of subsequent centuries, at Persepolis above all (Henkelman 2008; Álvarez-Mon 2018a: 837–844, 2019: 115–117). As to what the rock reliefs tells us about Elamite society, Álvarez-Mon (2019: 99) encapsulates it succinctly: "The clear demarcation of social hierarchy and the formalized physical representation of participants, including dignified gestures of worship and ritual food consumption, convey a structurally and stylistically idealized portrait of group identity." At the same time, these dramatically situated and ideologically assertive relief scenes need to be considered within the context of severe impingements upon Elamite identity and security caused by the ever-present threat from Assyria to the west. In this light, we can interpret the relief scenes and their associated public rituals and devotions as a means of cohering community identity in the face of chronic existential threats.

A small window into Neo-Elamite village life is provided by excavations at **Kalāntar** in north-eastern Khuzestan (Figure 11.76) (Valipour *et al.* 2017), which have uncovered rectilinear stone and clay houses, stone-lined tombs, typical Neo-Elamite ceramics and a few modest items of adornment. On the Ram Hormuz plain Neo-Elamite sites include the large mounded settlements of **Tol-e Bormi,** which inscriptional evidence suggests may be ancient Huhnur (Wright and Carter 2003), and **Tall-e Geser** where Neo-Elamite burials with iron and glazed grave goods were excavated (Carter 1994). A double "princess burial" was encountered during pipeline work at **Jubaji** east of Ram Hormuz (Figure 11.77), with the skeletons of two women aged around 17 and 30–35 in two bronze coffins accompanied by lavish gold jewellery including bracelets, hair pins, pendants and rings, bronze vessels and figurines, and glazed vessels (Figure 11.78) (Wicks 2015, 2018; Shishegar 2017; Bridey 2018: 562–563; Ahmadinia and Shishegar 2019; Álvarez-Mon 2020). On a bench adjacent to the tomb were skeletons of cow, sheep and birds along with many ceramic vessels as offerings to the deceased. Inscriptions associate the princesses with the king Shutur-Nahhunte son of Indada, as featured on the Kul-e Farah I relief, likely to be of early-mid 6th century BC date (Shishegar 2008).

A similarly rich Neo-Elamite stone-lined tomb was found by chance in 1982 at **Arjan** on the nearby Behbehan plain (Figure 11.79) (Alizadeh 1985a; Stronach 1997, 2005a; Álvarez-Mon 2004, 2008, 2009a, 2010a, 2011, 2012: 755–756, 2015a, 2020; Álvarez-Mon *et al.* 2011: 19–21; Shishegar 2017; Bridey 2018: 562–563), characterised by Álvarez-Mon (2008: 127) as "one of the most exceptional finds in recent Near Eastern archaeological discovery." The tomb contained a bronze coffin holding an adult male wearing a cotton garment and holding an iron dagger adorned with precious stones and gold filigree. Lying on the chest of the individual was an extraordinary

Figure 11.76 Kalantar, stone and clay architecture (Valipour *et al.* 2017: Figure 9) (image courtesy of Hamid Reza Valipour).

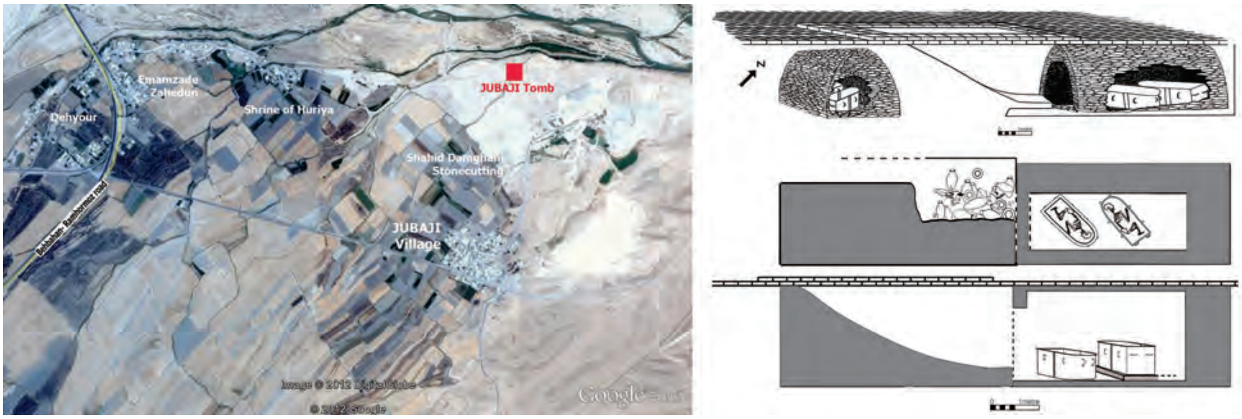


Figure 11.77 Jubaji map and plan of Neo-Elamite tomb (Ahmadinia and Shishegar 2019: Figure 3) (images courtesy of Roonak Ahmadinia).

Figure 11.78 Jubaji, Neo-Elamite tomb selected objects of gold and semi-precious stone, *ca*. 625–525 BC (Ahmadinia and Shishegar 2019: Figures 3, 18, 28–29) (images courtesy of Roonak Ahmadinia).

massive "open ring" with disked finials depicting opposed lion-head griffins (Figure 11.80) (Álvarez-Mon 2011: Figures 8–10). Outside the coffin were large numbers of gold objects and decorated bronze vessels, including a lion-headed beaker adorned with a frieze of running ostriches, altogether demonstrating "a blending of Elamo-Assyrian royal artistic tradition(s) with Zagros artistic traditions into a uniquely Elamite format – a visual language that in effect announces the appearance of early Achaemenid Persian art" (Álvarez-Mon 2011: 359). Most striking is an inscribed bronze bowl bearing narrative scenes of a drinking ceremony, the return of a hunting party, a battle to capture a city and other processional, musical and feasting occasions (Figure 11.81) (Majidzadeh 1992; Álvarez-Mon 2004: Figure 3; Lawergren 2018: 795–797). Rarely surviving cotton textiles, decorated with gold rosettes and disks, are amongst the earliest from Southwest Asia (Álvarez-Mon 2015a; Kawami 2018: 689). Four of the Arjan objects bear late Neo-Elamite inscriptions referring to "Kidin-Hutran, son of Kurlush," suggesting a date of 600–570 BC for the manufacture of the objects and their burial. The Jubaji and Arjan tombs (Figure 11.82) richly indicate the ability of Neo-Elamite royalty to access high-status materials and to commission superb artisanship to the glorification of their power in life and in death.

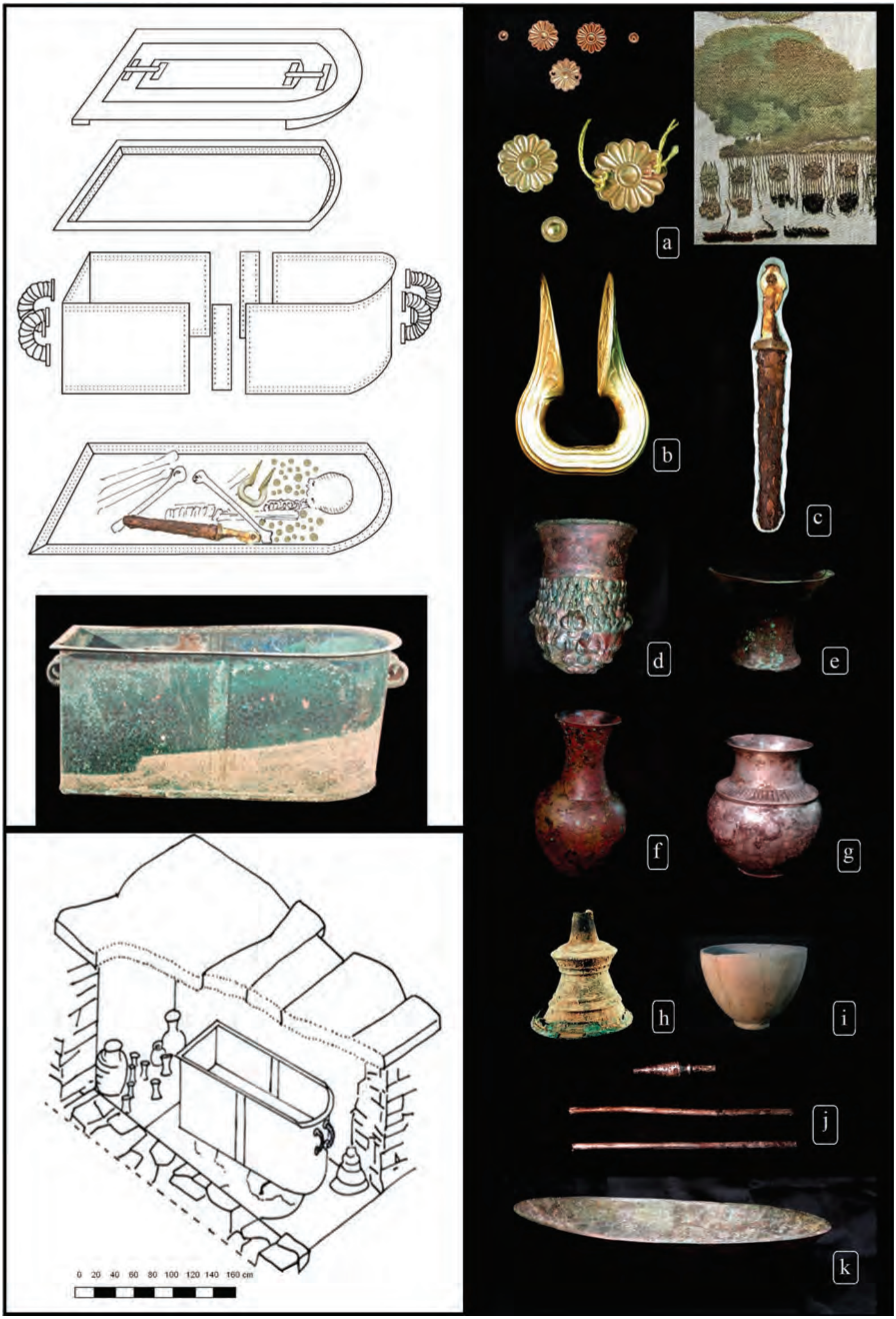


Figure 11.79 Arjan, Neo-Elamite tomb and selected grave goods (Álvarez-Mon 2020: pl. 167) (image courtesy of Javier Álvarez-Mon).

Figure 11.80 Arjan, Neo-Elamite tomb, open ring with disked finials (Álvarez-Mon 2011: Figure 7, 10) (image courtesy of Javier Álvarez-Mon).

Figure 11.81 Arjan, bronze bowl with narrative scenes (Álvarez-Mon 2004: Figure 3) (image courtesy of Javier Álvarez-Mon).

On the Marv Dasht plain in Fars the site of **Tal-i Malyan** hosts modest settlement at the start of the Neo-Elamite period followed by abandonment of the site and perhaps the whole region from *c.* 900–550 BC (Sumner 1986b; de Miroschedji 1990), matching with an absence of reference to Anshan in Assyrian texts through the Neo-Elamite period (Potts 2016: 280). Neo-Elamite carvings at Naqsh-e Rustam near Persepolis depict a probable king and queen possibly of 7th century BC date, with clear Assyrian influences in their execution (Álvarez-Mon 2009a). Survey and excavations in the Mamasani region of western Fars have identified a limited Neo-Elamite presence at a few sites, some of which continue into the Achaemenid period (Zeidi *et al.* 2009; Askari Chaverdi *et al.* 2010;

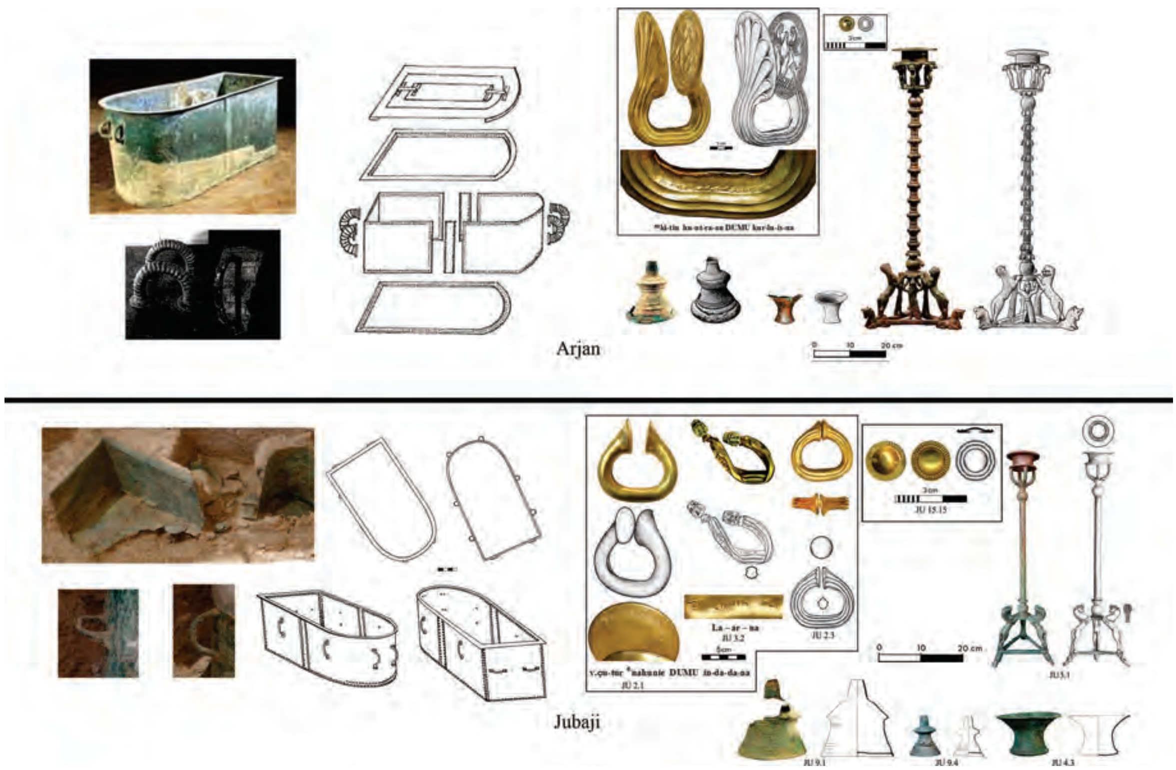


Figure 11.82 Arjan (top) and Jubaji (bottom) coffins and selected objects (Ahmadinia and Shishegar 2019: Figure 24) (images courtesy of Roonak Ahmadinia).

Henkelman 2012: 934; McCall 2013b) while in the Kur river basin settlements of the Shogha-Taimuran phase in the early first millennium BC appear to have been abandoned from *c.* 900 BC for several centuries until a resurgence in the Achaemenid period (Overlaet 1997, 2007; Overlaet and Pincé 2018).

The closing stages of the Neo-Elamite period are vividly attested through Assyrian sources, in particular treaties, campaign texts and palace relief scenes (Potts 2005a; Álvarez-Mon 2011: 356–360; Dubovský 2018a). Following Sennacherib's invasion of Elam in 694 BC, including a major naval fleet crossing the head of the Persian Gulf and heading up the Ulai river (Gorris 2019), a bilateral treaty was agreed on in 674 BC between the Elamite king Urtak (675–664? BC) and the Assyrian king Esarhaddon (681–669 BC) that facilitated friendly relations for a period of some ten years, including the provision of food aid to the Elamites by Esarhaddon's successor, Ashurbanipal, at a time of crisis. With the accession in 664 BC of the new Elamite king Te'umman (an Akkadianisation of his Elamite name Tepti-Huban-Inshushinak; Waters 2006) relations took a sharp turn for the worse, with a mass exodus of Elamite nobility to Assyria. The famous depiction in ten narrative scenes of the battle in 653 BC between Ashurbanipal and Te'umman at Til-Tuba on the banks of the Ulai river, displayed by Ashurbanipal in Room XXXIII of the Southwest Palace at Nineveh and on display at the British Museum, leaves little to the imagination regarding the brutality and ferocity of Iron Age warfare (Reade 1976; Nadali 2007; Watanabe 2008; Collins 2014; Razmjou 2018). Elamite humiliation at the hands of Assyria was further materialised in the form of Ashurbanipal's relief depiction of himself reclining on a couch, part of a narrative suite of reliefs probably originally located in Room S^1 of the North Palace at Nineveh. In this victory scene, Ashurbanipal is served by captured Elamite rulers, with the severed head of Te'umman hanging from a nearby tree (Álvarez-Mon 2009a). Following the fall of Nineveh to Babylonian and Median forces in 612BC, Elamite soldiers exacted iconoclastic revenge through highly focused mutilation by chisel of the king's and queen's faces in these relief scenes (Nylander 1998).

Textual accounts of Assyrian campaigns against Elam such as that of Ashurbanipal in 647/646 BC, including the devastation of Susa, make for grim reading:

> In a month of days I levelled the whole of Elam, I deprived its fields of the sound of human voices, the tread of cattle and sheep, the refrain of joyous harvest songs. I turned it into a pasture for wild asses, gazelles, and all manner of wild animals.
>
> (Brinkman 1991: 59 quoted in Potts 2016: 279)

Such words add poignancy to our reflections on the archaeological record of Elam through time and may encourage us to foreground the human tragedies underpinning episodes of rural abandonment and urban destruction that we so frequently encounter in the study of Iran's past. Despite this devastation and humiliation of Elam, there is some evidence for a continuation of the Elamite state in some form into the early phases of the Achaemenid domination of Iran (Álvarez-Mon 2011: 357–358; Henkelman 2011).

In summary, surviving archaeological and textual evidence for the Neo-Elamite period is scant but tantalising in its material, iconographic and ideological richness and distinctiveness when we do encounter it: "Taken together, place, self-representation, communal ritual, and worship provide a nexus of identity markers defining a population characterized by a specific culture and sociopolitical ideology" (Álvarez-Mon 2013b: 471). Key to the transition from the Neo-Elamite to the Persian Achaemenid worlds may have been the increasing importance of the horse and equestrianism as a status and a military asset of immense significance in the Achaemenid world (Moorey 1985). In this and many other respects, lie the major contributions of Elamite art, culture and traditions in helping to shape Achaemenid identity (Potts 2005a, 2016: 304–305; Henkelman 2012; Álvarez-Mon 2020: 500).

South-eastern Iran in the Iron Age, 1250–550 BC

Across all of south-eastern Iran, including the provinces of Sistan-Baluchistan, Kerman and Hormuzgan, our knowledge of the Iron Age is minimal with only the site of Tepe Yahya providing significant information (Magee 2004, 2005a, 2013; Maresca 2018). As with most other regions of Iran, evidence for the Bronze Age-Iron Age transition is lacking in south-eastern Iran. Bronze Age settlement at Tepe Yahya ends at *c.* 1400 BC (Beale 1986: 11), while Tal-e Iblis also appears to have been deserted for several centuries either side of 1000 BC (Caldwell 1967). Surveys of the Bard Sir plain and the Qobeira area of south-eastern Iran failed to assign any settlements to the period 1400–800 BC (Sajjadi 1987; Sajjadi and Wright 1990), a pattern matched by systematic survey of the region south from Jiroft to the Persian Gulf coast (Pfälzner and Soleimani 2015; Pfälzner *et al.* 2019). As Magee (2013: 494) stresses, these lengthy settlement gaps are complemented by similar lacunae in adjacent regions such as Pakistan and Southeast Arabia (Magee and Carter 1991; Magee and Petrie 2010).

It is beyond question that shifts in climate underpin these dramatic settlement gaps, attested as they are across vast swathes of Iran, Southwest Asia and more broadly (Neumann and Parpola 1987; Ward and Sharp Joukowsky 1992; Butzer 1995; Kaniewski *et al.* 2019). Palaeoclimatic evidence from lake cores, deep-sea sediments and speleothems from Iran, the Persian Gulf, Iraq, Anatolia and beyond concur in attesting protracted episodes of cool dry climate possibly caused by solar irradiance and volcanism (de Menocal 2001; Sharifi *et al.* 2015; Sinha *et al.* 2019). South-eastern Iran lay at the intersection between two major weather systems - westerly winds bringing winter rainfall on the one hand, and south-easterly summer monsoon rainfall from the Indian Ocean on the other - and the evidence suggests a significant weakening of both these systems in the late second millennium BC with a decline in precipitation and a concurrent increase in aeolian dust deposition (Lückge *et al.* 2001; Parker *et al.* 2006; Magee 2013: 495; Gurjazkaite *et al.* 2018). Settlement and agriculture in south-eastern Iran would have been especially sensitive to fluctuations in rainfall, given its low levels of rainfall at the best of times (Mortazavi 2007). As Magee (2013: 495) points out, the fact that the Helmand river derives its water ultimately from snow melt from the Afghan uplands explains why, against the trend, Late Bronze Age-Early Iron Age occupation appears to survive in the lower Helmand basin (Whitney 2006).

Following this long hiatus in settlement, Iron Age occupation restarts at **Tepe Yahya**, period III, from *c.* 800 BC contemporary with a resumption of settlement in Elam to the west (see above). Two stone and mudbrick buildings, square in plan and connected by a stone channel, appear to have served a communal function perhaps as meeting houses (Magee 2004, 2005a). Ceramics are locally made but with some evidence for transregional interaction in the form of Burnished Maroon Slipped Ware characterised by finely made trays and bowls found across the region from Southeast Arabia to Pakistan (Magee 2005b). A single complete chlorite vessel from Yahya sports decoration identical to that on vessels from Iron Age II sites in the United Arab Emirates and Oman (Magee 2004: Figure 41.2). The resurgence of settlement in south-eastern Iran from *c.* 800 BC, modest as it is (Vidali *et al.* 1976), may be connected to the introduction of the *qanat* irrigation system at about that time, using gravity

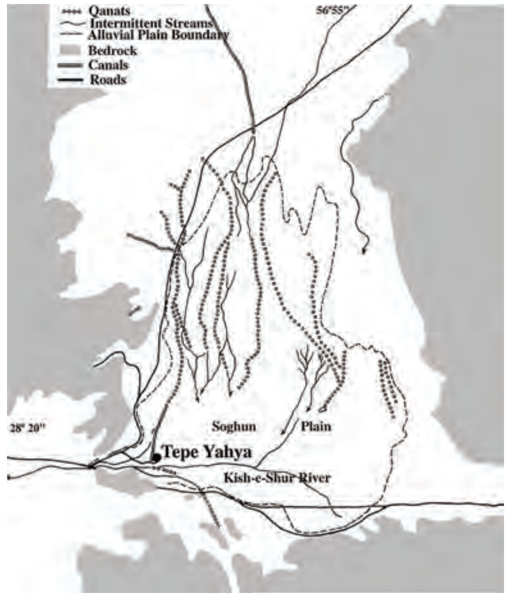


Figure 11.83 Tepe Yahya, possible hydrology of the Soghun valley in the Iron Age (after Magee 2005a: Figure 4).

to convey water through underground channels from aquifers to often distant fields (Figure 11.83) (Magee 2005a, 2013: 496–497). This innovation in irrigation technology came to have immense significance for the settlement and societies of Iran, mainly in periods which lie beyond the purview of this book (Spooner 2011; Vidale 2018b).

Above the period III buildings at Yahya, two mudbrick platforms were constructed in the immediate pre-Achaemenid decades of the early 6th century BC (Lamberg-Karlovsky and Magee 1999; Magee 2004). Associated ceramics indicate widespread connections across eastern Iran, Central and South Asia and Southeast Arabia (Magee 2004: 40–43). Radiocarbon dating of the massive mudbrick platform at **Konar Sandal North**, previously assumed to be Bronze Age in date (Chapter 9), indicates its construction at some stage during the Iron Age (Maresca 2018), perhaps contemporary with the similar platforms at Yahya. As with northern and central Iran and Luristan in the early-mid 6th century BC, these large-scale, low-key patterns of cultural connectivity across and beyond south-eastern Iran provide an historical framework that came to underpin the early development of the Achaemenid empire.

Media studies: "mighty Medes of the rising sun," *c.* 750–550 BC

Attempts at writing a history of the Medes, arguably "the least well-known of the peoples who ruled a major part of the ancient Near East" (Stronach and Roaf 2007: 43), have had to contend with Herodotus' account in the first book of his *Histories*, in which he traces the development of a unified Median state or empire with a major capital at Ecbatana (Hamadan) and a geographical reach as far west as the Halys river (modern Kızılırmak) in central Turkey. Persistent echoes of Herodotus' grand claims for Media take modern shape in cartographic representations of the Median "empire" that "give a sense of regional unity that far surpasses any archaeological or historical evidence" (Bernbeck 2019: 6, Figure 1) (Figure 11.84). A unitary image of Media through space and time is not supported by either the archaeological evidence, as discussed below, or the Assyrian sources all of which point to a Media composed of small-scale, fortified autonomous states each exercising control over local valleys and passes while participating in larger-scale networks of interaction as attested in commonalities in architecture, ceramics and small-find assemblages. Historical evidence for a unified Median state comes only very late in the period, with the late-7th century BC conquest of Assyria by a Median army led by Cyaxares "king of the Medes" in alliance with Babylon (Jursa 2003; Liverani 2003; Reade 2003; Radner 2013: 454). After this tumultuous event, the Medes once more recede from history till 550 BC when the Achaemenid king Cyrus defeats the Median king Astyages to become the paramount political figure in all Iran. The question of whether the Medes ever constituted a unified state or empire has taxed historians and archaeologists since the first relevant discoveries in the so-called "Median triangle" region around Hamadan in western Iran (Sancisi-Weerdenburg 1988, 1994; Lanfranchi 2003). Let us examine the evidence as we have it so far.

Most significantly, the history of Media in the 8th–6th centuries BC is intimately entwined with that of its western imperial neighbour, Assyria, from where almost all our relevant written sources come as we have no

Figure 11.84 The Median "empire" according to Herodotus (source: https://commons.wikimedia.org/wiki/File:Median_Empire-en.svg).

indigenous Median records (Reade 1978, 1995; Curtis 2001; Jursa 2003; Lanfranchi 2003; Radner 2003a, 2013; Tuplin 2004; Balatti 2017; Fuchs 2017; MacGinnis 2020). From Median personal names and technical terms, we know that the Medes spoke an Iranian language and were linguistically related to the Persians (Schmitt 2003; Rossi 2010; Potts 2014: 67). Assyria's engagement in the area of western Iran hosting the Median heartland, principally the central Zagros region, was initially to secure access to supplies of horses for mounted archers and chariot haulage in the Assyrian army. Like other peoples of the upland Zagros, the Medes were accomplished horse breeders and riders, always depicted on horseback in Sargon II's reliefs at Dur-Šarrukin (Khorsabad) (Radner 2003a: 42; Potts 2014: 79–81; Balatti 2017: 282–285). From the time of Ashurnasirpal II (883–859 BC) Assyrian armies marched into the Zagros via the Shahrizor plain, ancient Mazamua or Zamua, east of Sulaimaniyah with the site of Bakr Awa (Dur-Aššur) as the major staging post (Levine 1973; Altaweel *et al.* 2016; Balatti 2017: 256–259), with significant evidence for Assyrian fortifications also protecting a major route into the high Zagros via the Rania plain further north (MacGinnis *et al.* 2020). Assyrian interests in the Zagros evolved beyond the purely equestrian to include desire for pastoral and agricultural produce, including wine, and for timber to use in their massive construction programmes at the Assyrian capitals (Balatti 2017: 319–320), as well as control over movement of goods such as copper and lapis lazuli moving from further east through the Great Khorasan Road and associated routes (Brown 1986).

Early historical mentions of Median tribes occur in the reign of the Assyrian king Tiglath-Pileser III (744–727 BC), who was the first to establish Assyrian control of the upland Zagros and its major routeway the Great Khorasan Road, founding the provinces of Parsua near modern Sanandaj bordering Mannaea to the north (Zadok 2001) and Bit-Hamban in the region of Kermanshah (Reade 1978; Radner 2003b; Balatti 2017; Alibaigi and MacGinnis 2018). An Assyrian stele found in the Kermanshah region of western Iran and now in three pieces marks the campaigns of Tiglath-Pileser III against peoples of the Zagros region and beyond probably in 737 BC (Figure 11.85) (Levine 1972; Herrero 1973; Tadmor 1994; Alibaigi 2017). This and subsequent Assyrian expeditions against "the mighty Medes of the rising sun" (Tadmor *et al.* 2011: 41) may have reached as far into Iran as Mount Damavand in the Alborz range east of Tehran (Reade 1995: 40) and to the salt desert of the Dasht-e Kavir (Radner 2003a: 58–61; Alibaigi and Rezaei 2018), with the suggestion that the site of Sialk near Kashan may be equated with the Median fortified city of Tikrakka, described in the Annals of Tiglath-Pileser III as being on the edge of a salt desert and whose siege by Sargon II is depicted in carved stone on the walls of Room 2 of Sargon's palace at Dur-Šarrukin/Khorsabad (Alibaigi 2017).

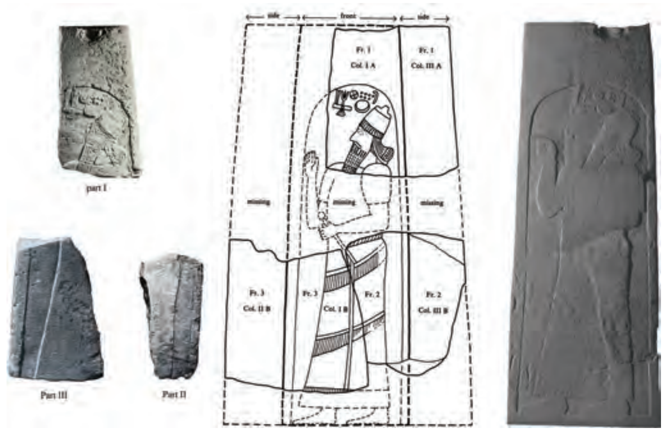


Figure 11.85 Stele of Tiglath-Pileser III found in western Iran (Alibaigi 2017: Figure 2) (images courtesy of Sajjad Alibaigi).

An inscribed stele found at the unexcavated site of **Najafabad** in Hamadan province commemorates the conquests in this region of Sargon II in the late 8th century BC (Figure 11.86). Following Reade (1995) the stele had been interpreted as supporting the identification of Tapeh Najafabad with ancient Kišessim, renamed by the Assyrians as Kar-Nergal, the Assyrian assault of which is also depicted in Room 2 of Sargon's palace (Levine 1972: 25; Gunter 1982; Gopnik 2011: 292–293; Frame 2013; Radner 2013: 444–445). More recent research led by Sajjad Alibaigi (Alibaigi *et al.* 2017; Alibaigi and MacGinnis 2018; Alibaigi 2019), however, proposes that Tapeh Najafabad is more likely to have been ancient Kisasi, the major city of the region of Urattus. In the same campaign, the Median stronghold of Ḫarḫar was captured by Sargon II and renamed Kar-Šarrukin, which Reade (1995; Radner 2013) identified with the site of **Tepe Giyan** in the Nehavand valley where excavations revealed rooms of a possible palace in the Assyrian style (Contenau and Ghirshman 1935). More recently, Alibaigi *et al.* (2016) suggest that the 20 ha fortified and moated site of Tapeh Kheibar on the northwest of the Mahidasht on the Great Khorasan Road is a likelier candidate for ancient Ḫarḫar (Figures 11.87–11.88), matching also with the depiction of Ḫarḫar in stone relief in Room 2 of Sargon's palace at Dur-Šarrukin/Khorsabad. Following later rebellions in 715 BC, according to the standard Assyrian practice of diffusing local loyalties and attachments to place, selected peoples of Ḫarḫar and Kišessim were deported to Assur on the Tigris where some of their residences and textual archives have been excavated (Miglus 1999: 301). Their documents suggest that these exiled Iranian families at Assur engaged in textile production, possibly in the form of hand-knotted carpets, as well as undertaking long journeys for the purpose of trade, probably with their homeland regions of Iran (Radner 2007,

Figure 11.86 Stele of Sargon II found at Najafabad, Hamadan province (Alibaigi *et al.* 2017: Figure 4; Alibaigi and MacGinnis 2018: Figure 2 (photo credit: Nima Fakoorzadeh, Baloot Noghrei Inst., courtesy of the National Museum of Iran; drawing courtesy of Sajjad Alibaigi).

Figure 11.87 Tapeh Kheibar, view from the air (Alibaigi *et al.* 2016: Figure 7) (image courtesy of Sajjad Alibaigi).

Figure 11.88 Tapeh Kheibar, view from the west (Alibaigi *et al.* 2016: Figure 8) (image courtesy of Sajjad Alibaigi).

2013: 448). The occasional finds of bronze basins in western Iran may also indicate significant Assyrian influence on elite upland communities (Alibaigi and Khosravi 2016).

Following the Cimmerian invasion of north-western Iran at *c.* 715 BC, the Scythians established a kingdom in Azerbaijan and ruled over much of Media until the rise to power of the Median king Cyaxares in *c.* 625 BC (Witzel 2013: 435). Archaeological evidence for the Scythians in Iran has been recorded or suggested at the sites of Ziwiye in Iranian Kurdistan, Hasanlu in southern Urmia and Baba Jan in Luristan amongst others, while there are hints of Median ceramics in post-Urartian levels at Bastam and sites beyond the borders of Iran (Kroll 2014). At the Iron Age III cemetery of **Laforak/Savadkuh** in Mazandaran, objects in Scythian style including daggers and arrowheads are suggestive of a significant Scythian presence in this region of northern Iran (Araghi and Mohajerneghad 2020). The richest Scythian evidence in Iran comes from a kurgan cemetery in **Meshgin Shahr**, Ardebil province (Figure 11.89) (Rezalou and Airmlo 2014, 2015). Iranian archaeologists here excavated an extraordinary complex of spectacular kurgan-type graves. Grave 22 contained the skeleton of an adult male accompanied by a horse, overlain by four further human skeletons. The principal burial, apparently looted in antiquity, was set within a stone and mudbrick rectangular chamber 6 × 2 m in area, roofed with timbers and coated in fine clay. Objects buried within the chamber of Grave 22 include artefacts of iron, stone, ceramics and glass, including an arrowhead of classic Scythian type (Figure 11.90). Graves 20, 21 and 26 appear to have been subsidiary to the central Grave 22. In Grave 20 no fewer than 34 complete horses were buried in two overlying rows, 17 below and 17 above. Beads of various materials including glass were deposited with the horses, perhaps attached to horse fittings. In Grave 21 the bodies of four adult females were buried with ceramic vessels, while Grave 26 contained eight horses, two dogs and two cattle. Many of the objects deposited in these graves show strong

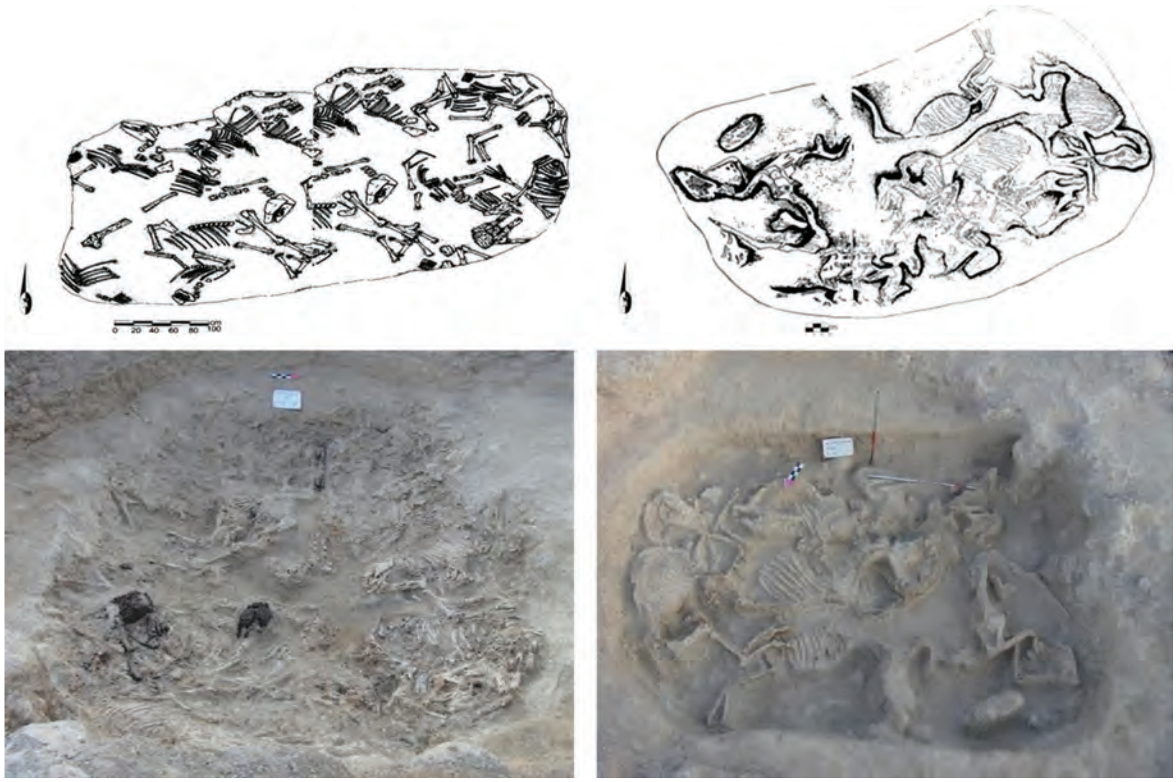


Figure 11.89 Khorramabad, Meshgin Shahr, kurgan graves numbers 20 and 26 (after Rezalou and Airmlo 2017: Figures 13, 15).

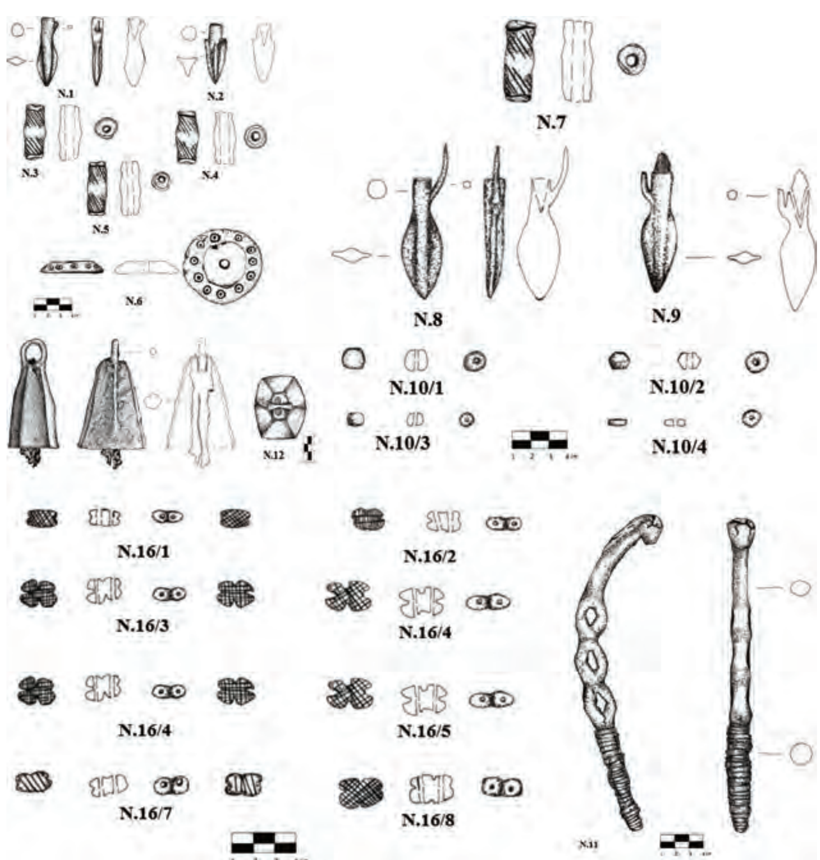


Figure 11.90 Khorramabad, Meshgin Shahr, selected finds from kurgan graves (after Rezalou and Airmlo 2017: Figure 6).

Figure 11.91 Heydarabad-e Mishkhas, Neo-Assyrian rock-cut relief (Alibaigi *et al.* 2012b: pl. 6) (image courtesy of Sajjad Alibaigi).

Scythian attributes suggestive of a date between 700–500 BC (Rezalou and Airmlo 2017). These kurgan burial traditions are comparable with those attested in Scythian cemeteries across vast regions of the steppe: northern Mongolia, southern Siberia and Russia, the Altai, north Caucasia, Crimea, southern Ukraine and south-eastern Europe. In addition to the equestrian input into Iran from Scythian ingression, the distinctive practice of wearing torcs in Iron Age Iran, unattested across the contemporary Assyrian and Levantine worlds, appears to be a fashion adopted from Caucasia and Transcaucasia to the north (Moorey 1985: 32).

The Medes continue to feature in Assyrian texts until *c.* 656 BC when Ashurbanipal dealt with a Median rebellion by sacking their cities (Radner 2013: 61–62) ten years before the Assyrian sack of Susa. Rock reliefs of an Assyrian king who may be Ashurbanipal at Shikaft-e Gulgul and Heydarabad-e Mishkhas in Ilam (Figure 11.91) may commemorate Ashurbanipal's victories in his Median campaign (Alibaigi *et al.* 2012b). One hundred years after their deportation, the exiled Median families at Assur could have served as a fifth column for the successful Median assault of Cyaxares on Assur in 614 BC, followed by the sacking of Nineveh in 612 BC and the fall of the Assyrian empire (Radner 2013: 449).

Assyrian texts portray the Medes as formidable opponents, organised in small-scale dynastic political units each headed by a "city lord" or *bēl āli* in Akkadian, a term uniquely applied to Median rulers, with relatively restricted geographical spheres of control (Lanfranchi 2003). These lords entered into vassalage with the Assyrian king, securing protection from their powerful northern neighbours of Mannaea and Urartu through tribute payment of horses, uniquely, to the Assyrian state (Radner 2013: 444). The Assyrian establishment along the Great Khorasan Road of a string of fortified sites with names prefixed with "Kar" or "trading quay" shows the importance of access to cherished materials, not solely horses, for the smooth running of the Assyrian empire. Median sites were frequently situated at strategic points along key trade routes, which enabled them to play an important role within the movement of valuable commodities from further east to Assyria, including metals and lapis lazuli (Balatti 2017: 287).

Regarding the archaeology of Media, we have information from a few key sites in western Iran and beyond (Figure 11.1), even if the identification of Median sites by their material remains is "necessarily hazardous" (Stronach 2003, 2011; Genito 2005; Razmjou 2005a; Khatchadourian 2016: 87–96; Gopnik 2017; Boucharlat 2020). A major drawback is the lack of evidence from Hagmatana (Greek Ecbatana), defined by Herodotus (I.98) as the capital of the Median state. An Assyrian stele at Nimrud of Šamši-Adad V records a victory in *c.* 820 BC over "Sagbita, the royal city of Hanaširuka the Mede" (Radner 2013: 444), which has been plausibly identified with modern Hamadan (Medvedskaya 2002). But ongoing excavations at the mound in modern Hamadan have as yet failed to locate significant pre-Achaemenid, or Achaemenid, occupation (Boucharlat 1998; Sarraf 2003; Stronach and Roaf 2007: 44; Mohammadifar *et al.* 2012). Our most important Median evidence comes from two sites of the central Zagros region southwest and south of Hamadan, Godin Tepe and Nush-i Jan, complemented by recently excavated sites across a broader region of western and central Iran. Surveys of the central Zagros suggest an intensification of settlement across the fertile plains in the centuries of Median stability (Figure 11.92) (Heydarian and Ghorbani 2016).

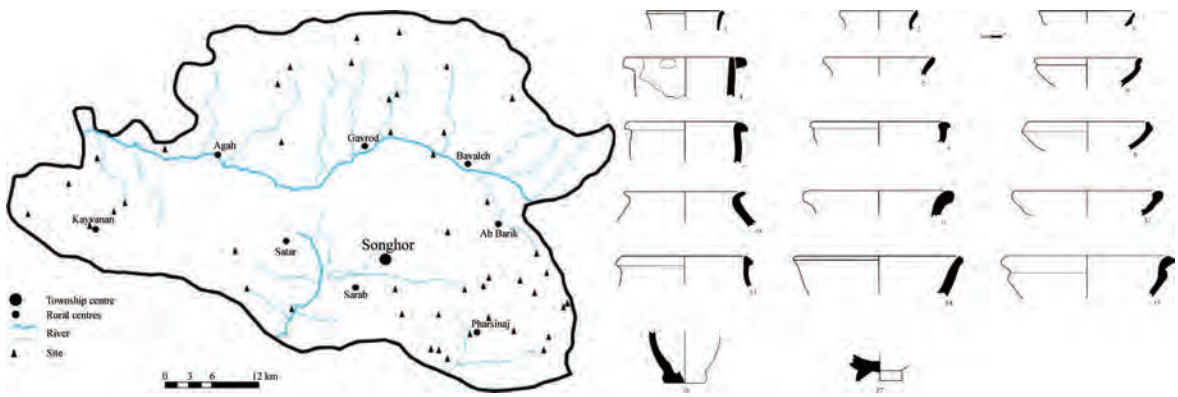


Figure 11.92 Sonqor-Koliyaie plain, central Zagros, Iron Age settlement (after Heydarian and Ghorbani 2016: Figure 10).

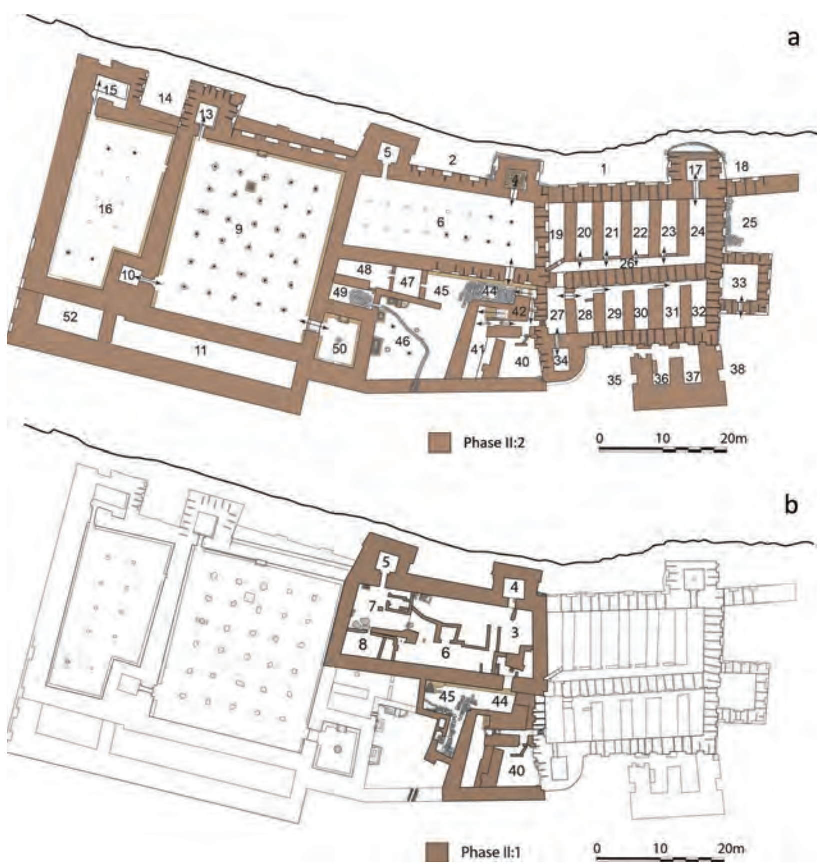


Figure 11.93 a: Godin Tepe level II.2, main Median phase (Gopnik 2011: Figure 7.7); b: Godin Tepe level II.1, reoccupation of part of the Median citadel (Gopnik 2011: Figure 7.18) (image courtesy of Hilary Gopnik).

At **Godin Tepe** in the Kangavar valley, level II.2 includes a formidable multi-phased citadel on the mound's summit, ultimately covering more than 5000 m^2 (Figure 11.93a) and containing three massive columned halls, storage magazines, and a substantial kitchen with large hearths, protected by 3 m-thick exterior walls with arrow slits (Young and Levine 1974; Gopnik 2003, 2005, 2011: Figure 7.7, 2017). After approximately 150 years of use and rebuilds, the citadel was abandoned without evidence for violent destruction at *c.* 650 BC (Gopnik 2011: 345). A modest domestic structure was then constructed in the ruins of the citadel architecture (Figure 11.93b). Finds from within the Godin citadel were rather sparse apart from large quantities of undecorated buff ware ceramics. Tools and weapons were made of iron apart from arrowheads that were of bronze. Radner's (2013: 452) suggestion of Araziaš for the Median and Assyrian name of Godin Tepe in level II.2 is persuasive given that the city lord of Araziaš stayed in power throughout the Assyrian period and could therefore have constructed and occupied the massive citadel on Godin Tepe's summit. The unexcavated site of **Tapeh Pa Qaleh Dehlur** also appears to have been a major Median fortified site of the Kangavar valley and may have been a key site within the region known by the Assyrians as Bit-Ištar which Alibaigi and MacGinnis (2018; *contra* Radner 2003b) equate with the Median toponym of Urattus. A fortress of probable Median date has been excavated at **Bisotun** near Kermanshah, situated for control of the Great Khorasan Road (Luschey 2013).

Located on the Malayer plain east of Godin Tepe, the site of **Nush-i Jan** bears many parallels in architecture, ceramics and small finds to Godin level II.2 (Stronach 1969, 2011; Roaf and Stronach 1973; Stronach *et al.* 1978; Curtis 1984, 2005a; Stronach and Roaf 2007; Roaf 2010). Spectacularly situated on a natural rock outcrop (Figure 11.94), Median occupation at the site commences with an imposing Central Temple tower constructed on the rocky summit, with a free-standing fire altar. With walls surviving up to 8 m in height, thanks to its infilling (Figure 11.95), the Central Temple has a distinctive stepped lozenge plan with a stepped triangular cella. Further buildings were then constructed around the Central Temple (Figures 11.96–11.97), including a Columned Hall with a sub-floor 25 m-long tunnel (probably unfinished; Figure 11.98), a second temple and a fort or fortified storehouse, all surrounded by an encircling wall composed of rows of tall attached arches giving a most impressive exterior aspect. Some of the structures were then deliberately filled with deposits of mudbrick and small stones which, had the filling been completed (only the Central Temple was carefully and completely filled with locally available shale), would have resulted in a packed platform. This solidly packed structure may have been intended to support a new phase of the temple that was never built (Stronach and Roaf 2007: 54) or, more probably, the meticulous packing, which respects even the fine interior fittings of the temple, may have been the outcome of a shift in religious practices that demanded closure of a still-respected temple while adapting to new circumstances, which could have been the incorporation of the region into the Achaemenid empire at *c.* 550 BC (Curtis 2005a: 241). At the least, the construction and indeed the infilling of these massive structures argue for the ability of an elite power to mobilise an extremely impressive labour force on at least two major occasions. Following the episode of infilling, there is evidence for a late "squatter occupation" (a term effectively critiqued by Bernbeck 2019) (Figure 11.99), *c.* 550–500 BC, in the form of more modest dwellings inside the Columned Hall and on top of the unfinished filling, indicating a major discontinuity in the function of the site.

Exact dating of the structures at Nush-i Jan is unclear but the pottery and small finds, including seal impressions from the Western Temple and a hoard of over 200 silver objects, several of them heirlooms from as far back

Figure 11.94 Nush-i Jan, view of site (photo credit: Nicole Brisch; courtesy of Sajjad Alibaigi).

Figure 11.95 Nush-i Jan, inside the Central Temple (photo credit: Wendy Matthews).

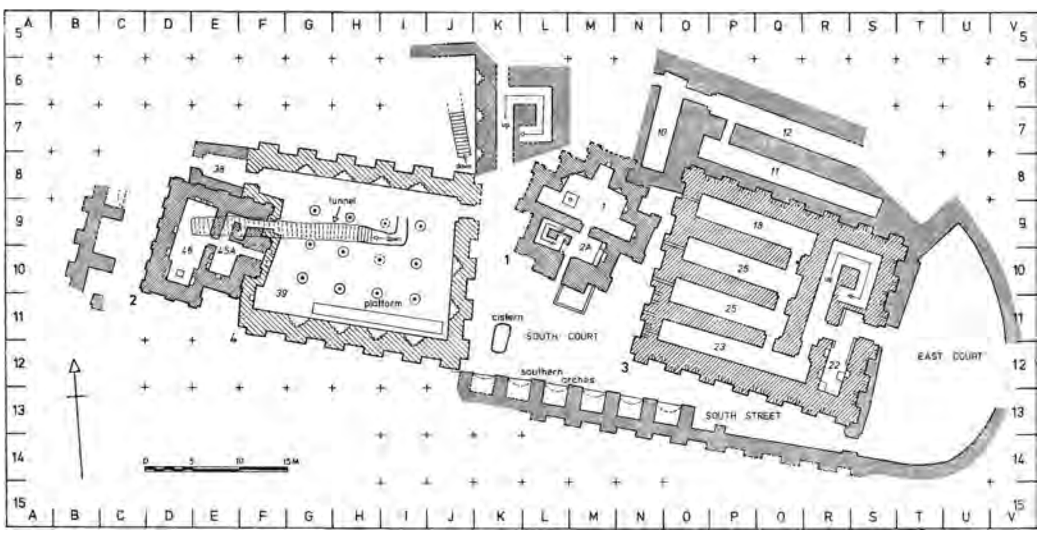


Figure 11.96 Nush-i Jan, plan of the main Median level (after Stronach *et al.* 1978: Figure 1).

Figure 11.97 Nush-i Jan, view of excavated and conserved architecture, from the Columned Hall looking east (photo credit: Roger Matthews).

as 2000 BC, found in a bronze bowl buried below floor level (Figure 11.100) (Stronach 1969: 15–16; Bivar 1971; Vargyas 2008), suggest main occupation for much of the period 750–600 BC, with significant evidence of Assyrian influence on the material culture (Curtis 2005a; Stronach and Roaf 2007: 5). Animal remains from the site show a heavy reliance on sheep, goat and cattle, with significant representation of various breeds of horse including heavy and miniature types (Bökönyi 1973; Stronach *et al.* 1978). The inhabitants hunted in the mountains for wild goat and sheep, red deer and wild cattle. The archaeobotanical evidence reveals cultivation of emmer, bread wheat, barley, rye and some pulses (Kyllo and Hubbard 1981).

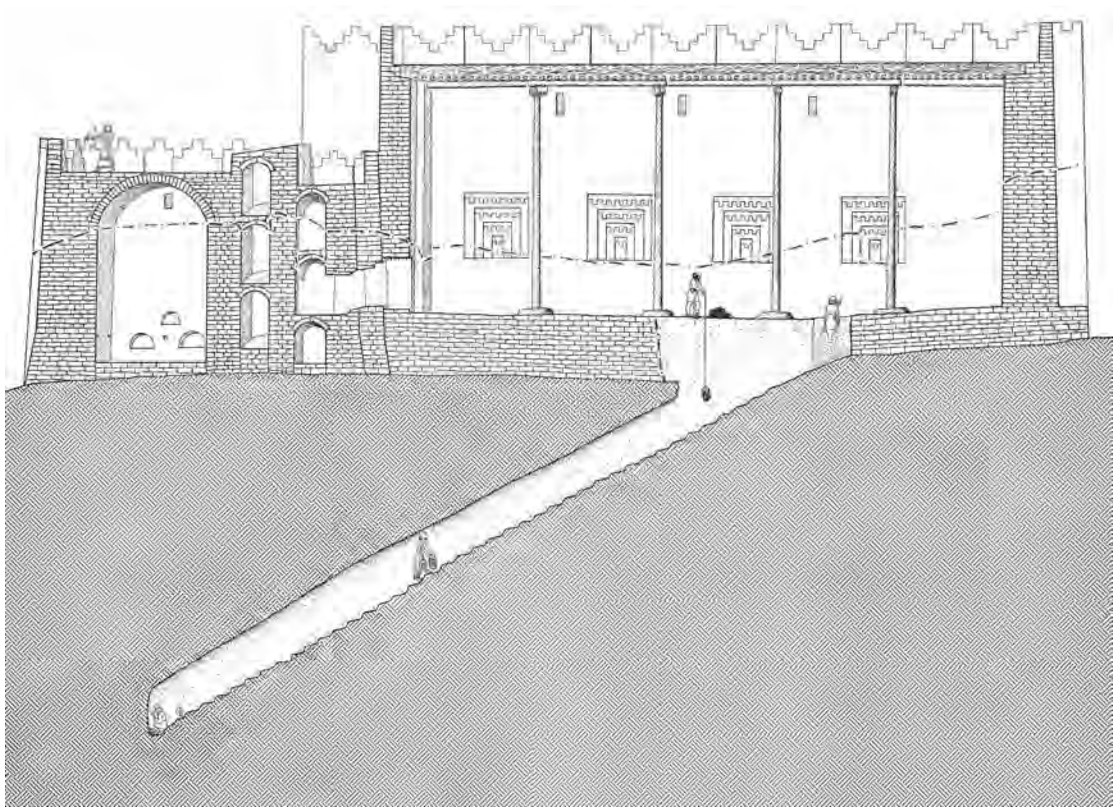


Figure 11.98 Nush-i Jan, reconstructed (above the dot-dash line) section and elevation through the main Median level, looking north (after Stronach *et al.* 1978: Figure 3).

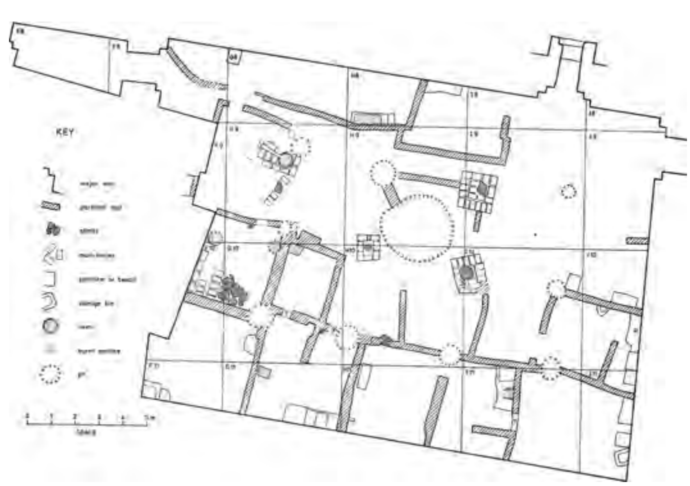


Figure 11.99 Nush-i Jan, plan of "squatter occupation" within the Columned Hall (after Stronach *et al.* 1978: Figure 4).

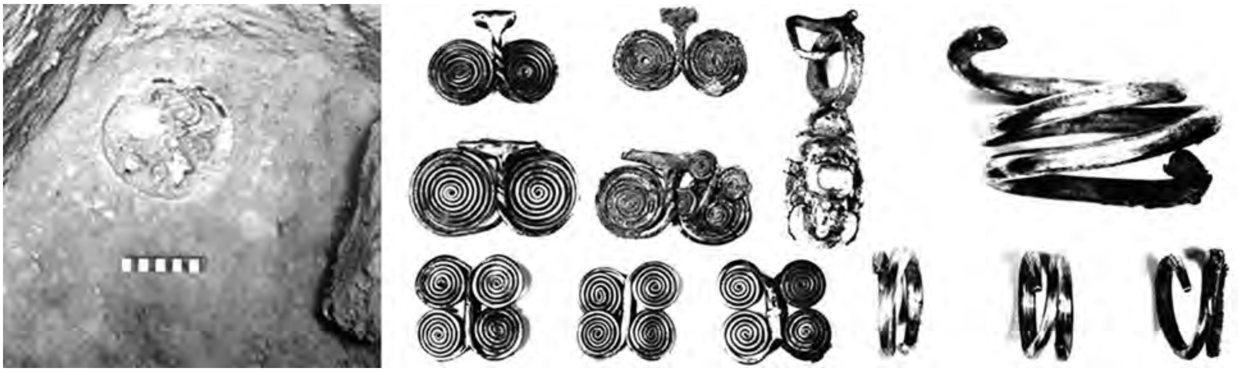


Figure 11.100 Nush-i Jan, selected objects from the Median hoard (Curtis 2000: Figure 37) (permission courtesy of John Curtis).

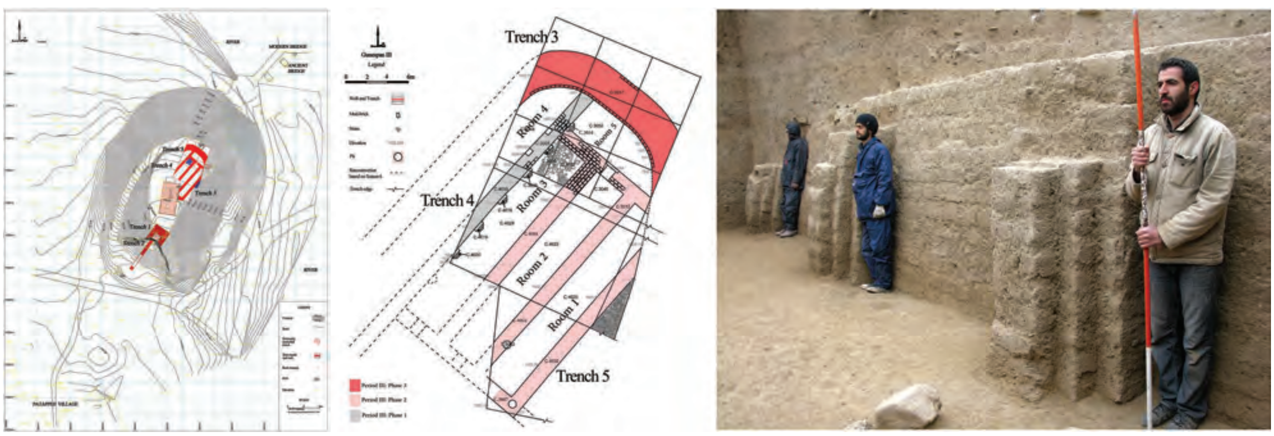


Figure 11.101 Gunespan, fortified building of Median date (Naseri *et al.* 2016: pls 3, 5, 7a) (image courtesy of Reza Naseri).

A Median-style storehouse similar to that of Nush-i Jan, but with thicker walls, has also been excavated at **Moush Tepe** near Hamadan (Mohammadifar *et al.* 2015), and Median levels exposed at the hilltop site of **Tepe Yalfan** (Almasi *et al.* 2017a, 2017b) and at **Tappeh Gheshlagh** (Motarjem and Sharifi 2019). At **Gunespan** 30 km southeast of Malayer, Reza Naseri and colleagues excavated a fortified building with associated pottery comparable to Median examples at Nush-i Jan, Godin Tepe and Baba Jan. The Gunespan building (Figure 11.101) comprises rectangular storerooms enclosed by an oval fortification wall, with engaged pilasters along one inner wall face (Naseri *et al.* 2016; Genito *et al.* 2019). Level III at **Baba Jan** further southwest includes ceramics comparable to Median levels at Godin and Nush-i Jan, indicating that the fortified manor with painted room there may have belonged to a local Median city lord (see above; Goff 1977, 1978, 1985). The complex was destroyed by fire in the late 8th century BC and reoccupied by squatters before a final village period in the 6th–5th centuries BC. The location of Baba Jan in the northeast of the Pish-e Kuh suggests the site may have belonged within the territory of Ellipi, as attested in Assyrian texts (Medvedskaya 1999; Balatti 2017: 262).

At the multi-period site of **Tepe Ozbaki** on the Savajbulaq plain west of Tehran (Figure 11.102), four phases of a possible Median-style fortress, with ceramics comparable to those of Godin II.2 and Nush-i Jan, have been excavated, the uppermost phase with walls surviving up to 3 m in height and covering 950 m^2 (Majidzadeh 2001, 2010), suggesting the inclusion of this region of north-central Iran within the influence of the Median world. Not far to the south, between Tehran and Qom, the site of **Zar Bolagh** is dominated by a multi-storey stone-built oval structure which, as at Nush-i Jan, was deliberately packed with shale and gravel to ceiling height (Figure 11.103). Additionally, the packed structure was then totally encased within stone and mudbrick

Figure 11.102 Tepe Ozbaki, view looking north (photo credit: Hojatollah Ahmadpour; courtesy of Rouhollah Yousefi).

masonry thus concealing the packed building from view (Malekzadeh *et al.* 2014). A remarkably similar packed and encased structure adorns the hill-top site of **Vasun-e Kahak** some 90 km to the south of Zar Bolagh (Malekzadeh 2004). Both these structures appear to have served cultic purposes of an unclear nature. Taken in consideration with the Central Temple at Nush-i Jan, these packed shrines or sanctuaries of later Iron Age west-central Iran suggest a dramatic realignment of cultic practice in the region, arguably indicative of religious conversion in the Median or early Achaemenid periods. Examples of stamped baked bricks displaying a range of motifs including humans, animals and flowers at a range of sites across central-western Iran, such as **Sialk** (Figure 11.104) Shamshirgah, Qoli Darvish and Qolam Tappeh, may represent a native Median art medium and style that would have been displayed as decorative architectural elements (Malekzadeh and Naseri 2013; Naseri and Malekzadeh 2019).

Ceramics with Median and west Iranian traits, such as burnished grey ware and horizontal loop-handled bowls, have been excavated at **Tappeh Qasrdasht** near Persepolis in Fars, indicating connections of the Achaemenid homeland region with western Iran well before the rise to dominance of the Achaemenid state (Atayi and Roaf 2019). Median sites beyond Iran are especially difficult to identify but the occurrence of certain ceramic and architectural forms may indicate dispersed Median presence or at least some influence at sites such as Nor Armavir and Arinberd in Armenia, Altıntepe, Van and Tille Höyük in Turkey, Qizkapan and Tell Gubba in Iraq and Ulug Depe in Turkmenistan (Boucharlat *et al.* 2005; Roaf 2008; Kroll 2019; Rezaei 2019).

While we have severe challenges in defining the extent and identity of Media through time and space, we can nevertheless point to several characteristics that draw together the archaeological and historical evidence in a persuasive manner (Root 2002b). Firstly, several of the excavated sites, including Godin Tepe, Tepe Nush-i Jan, Moush Tepe, Gunespan, Baba Jan and Tepe Ozbaki, show significant commonalities in architecture (Figure 11.105) (Stronach 2011; Naseri *et al.* 2016: pl. 21; Boucharlat 2020), ceramics and small finds to be considered as arguably Median. Median settlement can be summarised as dispersed with fortified nodes controlling major

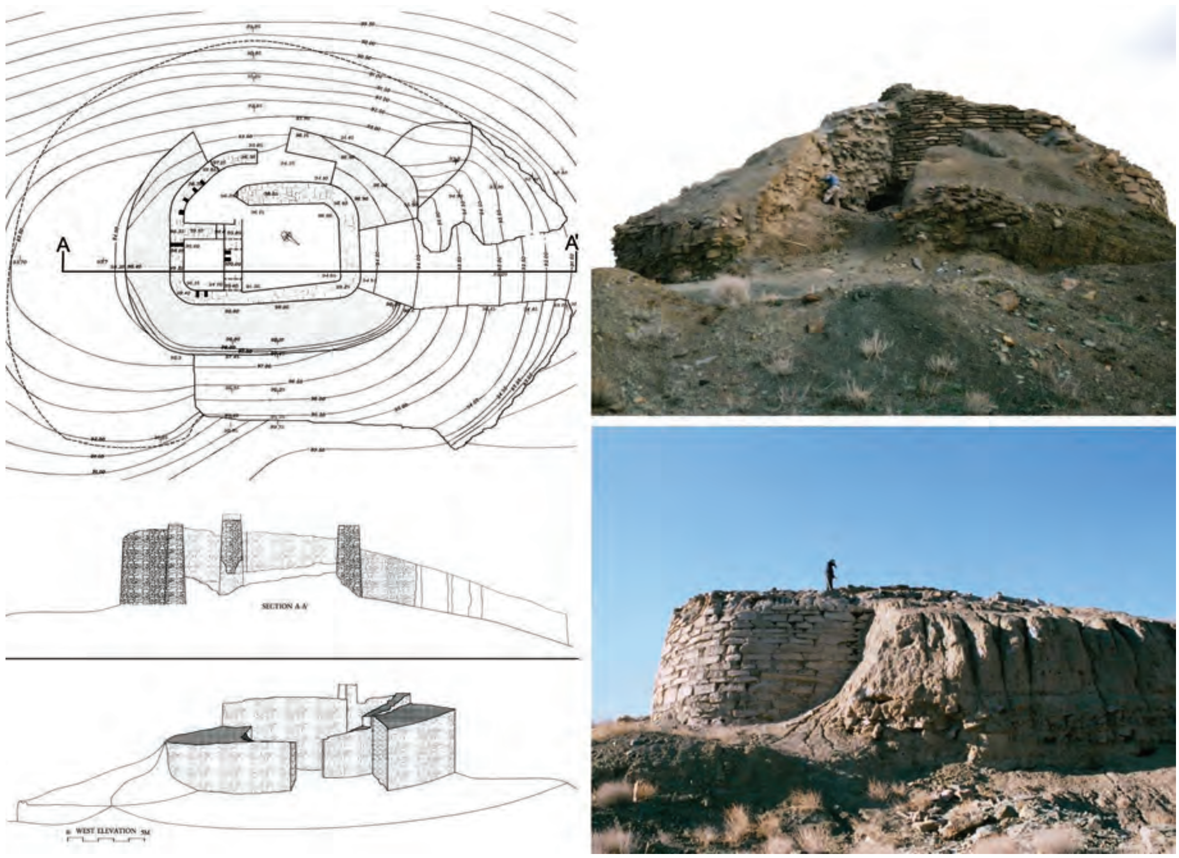


Figure 11.103 Zar Bolagh, views of site and excavated oval structure (Malekzadeh *et al.* 2014: pls 1, 3) (images courtesy of Reza Naseri).

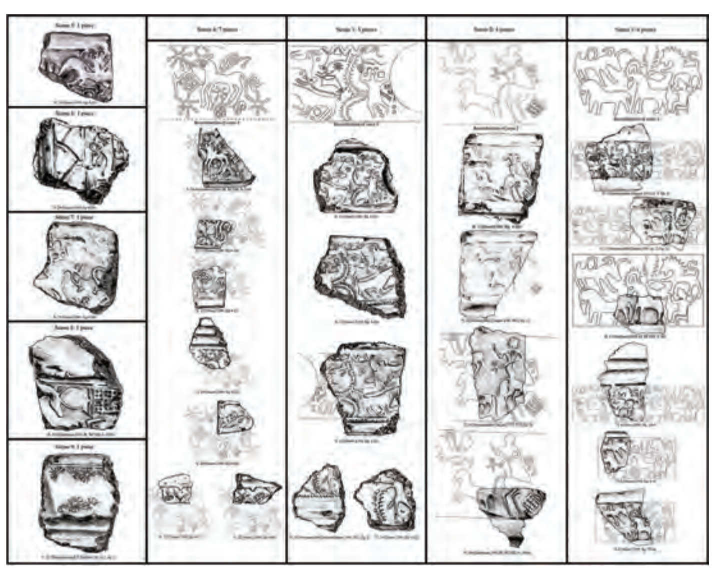


Figure 11.104 Tepe Sialk, decorated bricks of the Iron Age III period (Naseri and Malekzadeh 2019: Figure 7.2) (image courtesy of Reza Naseri).

plains, valley and passes. The style of fortification at putative Median sites is distinctive, in contrast to fortified sites of Urartu and the Levant as depicted in Assyrian reliefs, composed of rows of walls forming parallel storage rooms and towers with rectangular openings (Balatti 2017: 260; Genito *et al.* 2019).

We have little understanding of rural settlement beyond the fortified sites, but plant and animal remains from Nush-i Jan indicate an economy based on cultivation of barley, emmer, bread wheat, peas, lentils and

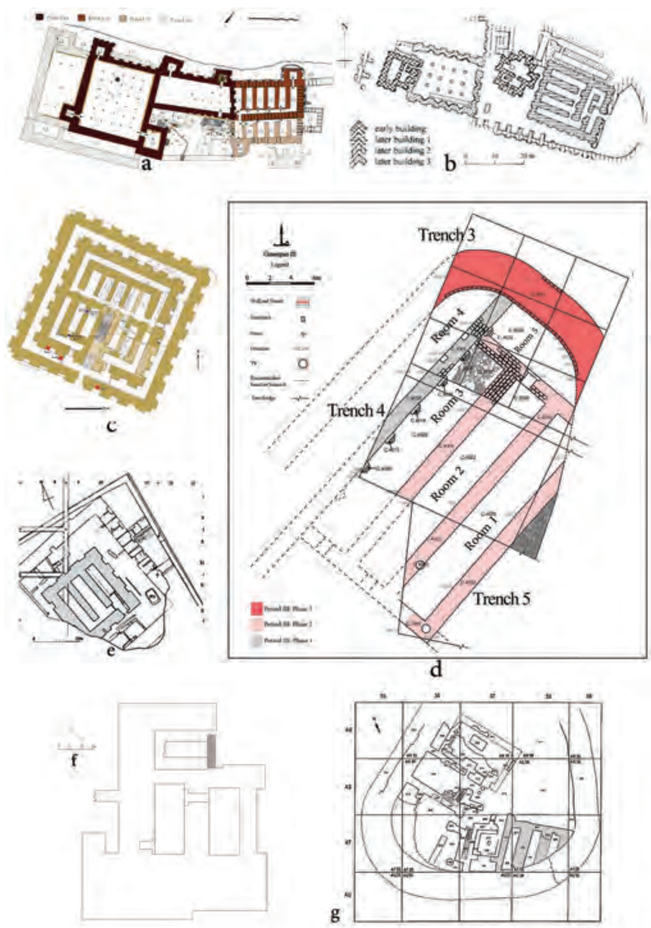


Figure 11.105 Storage and other structures of Iron Age III date: a: Godin Tepe; b: Nush-i Jan; c: Ulug Depe; d: Gunespan; e: Tell Gubba; f: Moush Tappeh; g: Tepe Ozbaki (Naseri *et al.* 2016: pl. 21) (image courtesy of Reza Naseri).

grapes alongside herding of sheep, goat, pigs and cattle with evidence for horse-breeding and, less so, for use of Bactrian camels imported from the east (Stronach *et al.* 1978; Kyllo and Hubbard 1981; Balatti 2017: 285–286). There is also significant evidence for hunting of wild species including goat, red deer, birds and hare, probably as an elite pursuit (Balatti 2017: 286–287). Survey of the Malayer plain, dominated by Nush-i Jan, detected 84 sites with Median buff ware sherds including three “monumental sites,” a few hill-top sites and many small mounds (Howell 1979; Stronach and Roaf 2007: 49), suggestive of some level of settlement hierarchy. As to its geographic extent, Media was highly flexible in its distribution through time, but generally included parts of the Iranian provinces of Azerbaijan, Kurdistan, Luristan and the central Plateau as far north and east as the Tehran plain, Mount Damavand and the edges of the Dasht-e Kavir and occasionally into north-eastern Iran (Potts 2014: 75–76).

In recent decades scholarship (Sancisi-Weerdenburg 1988; Liverani 2003; Roaf 2010; Waters 2011) has deconstructed the concept of a Median empire as vividly portrayed in the first book of Herodotus’ *Histories*, generating in its place an image of Media as a loose confederation of tribes occasionally acting in concert to devastating effect, such as the conquest of Assyria, but lacking in the structures, mechanisms and bureaucracies of centralised imperial control. Brown’s (1986) innovative application of a model of secondary state formation to the case of Media proposes that, stimulated by decades of aggressive Assyrian intrusion, Median petty kings learnt by example how to organise and administer themselves politically and economically so as to achieve state-like status: “the Neo-Assyrian imposition of tribute and tax on vassal Median chiefdoms would have touched off a chain reaction of effects that would have encouraged hierarchical tendencies both within individual polities and among the various chiefdoms affected,” as arguably attested by the grandiose architecture of Godin Tepe in its Median phase (Brown 1986: 115; Genito 2005; Balatti 2017: 262–264). But a major significance of the Median state, and its sway across Iran, however centralised or not, as a precursor to Achaemenid Persia cannot be overstressed (Henkelman 2003b; Roaf 2010; Waters 2011).

Achaemenid Persia: archaeology of a world empire, 550–330 BC

The Achaemenid Persian empire was the largest and most powerful political entity the world had hosted up to that time, "an unprecedented experiment in world empire" as it has been characterised (Khatchadourian 2012: 963, 2016). Because of its immense geographical reach, diverse multi-ethnic make-up, innovative experimentation in modes of imperial rule and long-term impact on subsequent socio-economic and political systems of Iran and beyond, the Achaemenid empire merits study not only on its own terms but also as an historical phenomenon of truly global significance, as is increasingly the case (Wiesehöfer 2009; Daryaee and Rezakhani 2014). The empire's control extended from Thrace and Macedonia in Europe and Libya in North Africa in the west across all the Middle East and Central Asia as far as the Syr Darya (Jaxartes) and Indus rivers in the east (Figure 11.106).

The origins of the Achaemenid empire are obscure, although increasingly we are able to situate its early history within the context of the Iron Age polities of Elam, Anshan and the Medes (Wiesehöfer 1996; Stronach 1997, 2013; Allen 2005; Briant 2005; Henkelman 2012; Potts 2016). The name "Achaemenid" derives from the dynasty's founding king, Achaemenes, about whom we know very little beyond the fact that his name first occurs in inscriptions of Darius I (522–496 BC) (Waters 2004). The first great Persian king, Cyrus (the Great; 558–530 BC), was descended from Cyrus I and Cambyses I, kings of Anshan in Fars (Waters 2004; Potts 2005c, 2011b), through a royal line from Cyrus' great-grandfather Teispes. Archaeological evidence from the region of Anshan (Tal-i Malyan on the Marv Dasht) is, however, singularly lacking for both the pre-Achaemenid (Iron Age III) and Achaemenid periods (Boucharlat 2005: 226, 2013a: 504). Cyrus' achievement was to establish the empire through the consecutive conquest and absorption of pre-existing large-scale political entities, including Media in *c.* 550 BC, Lydia in Anatolia in the 540s BC and Babylonia in 539 BC, followed by strenuous campaigning to the east, which established the Syr Darya as the empire's north-eastern border. Critical to Achaemenid success was the incorporation of Median, Elamite and other long-standing cultural traditions of Iran alongside new Iranian identities in forging an imperial Persian sense of identity, at least at an elite level (de Miroschedji 1985; Henkelman 2008, 2012, 2018; Álvarez-Mon 2009b, 2018a, 2020: 500; Garrison 2010; Soudavar 2010; Root 2011; Potts 2016; Tavernier 2018a; Zadok 2018a).

Figure 11.106 The Achaemenid Persian empire at its greatest extent, showing provinces and the royal road from Susa to Sardis (Sauvage 2020: 132) (image courtesy of Damien Agut-Labordère and Martin Sauvage).

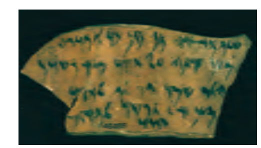
The thorny question of "where the Persians came from" should not be separated from the wider issues around Iranian migrations discussed earlier in this chapter. Early suggestions that the Persians migrated into Fars from Parsua in western Iran (Ghirshman 1954a: 91) were succeeded by proposals that the Persians arrived in Fars directly from the north or east in the later second millennium BC (Stronach 1974; de Miroschedji 1985). But ceramics from recent excavations at Tappeh Qasrdasht, situated between Pasargadae and Persepolis, which indicate strong connections with sites of Iron Age II and III date in western and north-western Iran, have encouraged a tentative revival of the notion of a western origin for the Persians in the centuries preceding 550 BC (Atayi and Roaf 2019).

Following his death in 530 BC, Cyrus was buried in a spectacular tomb at Pasargadae, the capital city founded by Cyrus. His successor, Cambyses (530–522 BC) extended the empire to the southwest through the conquest of Pharaonic Egypt after commencing work, never completed, on a new capital city on the Dasht-i Gohar 3 km to the north of the future site of Persepolis (Stronach 2001: 100–101). The following king, Darius (522–496 BC), dealt successfully with internal rebellions and regional revolts before adding the Indus Valley to the empire's limits in the southeast and establishing a significant presence in south-eastern Europe to the west. In the gold and silver foundation tablets deposited by Darius at his new capital of Persepolis he could justifiably claim "Here is the kingdom that I possess, from the Sakas [Scythians] who are beyond Sogdiana to the land of Kush [Nubia], from India to Sardis" (Briant 2005: 14). Internal rivalries and a constant need to police the borders of the empire consumed the energies of subsequent Achaemenid kings, including Xerxes (486–465 BC), Artaxerxes (465–424 BC), Darius II (424–404 BC), Artaxerxes II (404–359 BC), Artaxerxes III (358–338 BC), Artaxerxes IV (338–336 BC) and Darius III (336–330 BC). In a series of lightning campaigns in 334–331 BC the Macedonian conqueror, Alexander, swept through the Achaemenid lands ultimately putting Persepolis to the torch (Kosmin 2013). But until his death at Babylon in 323 BC, Alexander saw himself as sustaining the traditions of Achaemenid imperial rule and he strove to maintain the empire's territorial and administrative integrity, as his successors spectacularly failed to do.

Our knowledge of the Achaemenid empire comes from both historical and archaeological sources (http://www.achemenet.com/en/ is an excellent resource regarding multiple aspects of the archaeology and history of the Achaemenid empire). We have the empire's own written records, in the form of monumental inscriptions and cuneiform clay tablets (Table 11.3) (Stolper 2005; Kuhrt 2007; Henkelman 2013; Tavernier 2017). Monumental inscriptions were displayed in three (rarely, four, including Egyptian) of the major languages of the empire, most famously at Darius I's rock carving at Bisotun (Figure 11.107) (Garrison 2013): Old Persian, the Indo-European language of the ruling elite; Elamite, the ancient language of Khuzestan and Fars in southern Iran, also used in administrative texts; and the Babylonian dialect of Akkadian, an ancient Mesopotamian language of learning and high civilisation. But the most important language of imperial communication was Aramaic, a northwest Semitic language originally of Syria and Upper Mesopotamia (Greenfield 1985; Joisten-Pruschke 2010). Written alphabetically and usually on perishable materials such as leather and papyrus, and occasionally also on clay and metal objects, Aramaic was used across the empire as a *lingua franca* of legal and administrative activity. The ability of Achaemenid elites to adapt their use of language, in format and content, to regional political circumstances is vividly illustrated by the Cyrus Cylinder from Babylon (Kuhrt 2007: 70–74; Curtis 2013a, 2013b; Finkel 2013), which takes the physical shape of a traditional Babylonian building foundation inscription (Figure 11.108), while its text is phrased in Mesopotamian terms, including a reference to the Assyrian king Ashurbanipal, by that time dead for almost a century.

From outside the empire, we are also able to draw on historical or quasi-historical sources such as the Old Testament (Kuhrt 2001: 98). In the books of Ezra and Nehemiah, the Persians are portrayed in a favourable light as supporters of the Yahweh cult, restorers of the Temple at Jerusalem and facilitators of the return of people from Babylonia to Judah, exiled there in 586 BC following Nebuchadnezzar II's conquest of Judah. By contrast, the book of Esther, probably written in the 2nd century BC, treats Persian court life in line with Greek views of the Persians as decadent and weak. Classical Greek sources (Brosius 2006, 2013) include Herodotus for the early Achaemenid period, with a focus on the Greek wars with Persia, 490–478 BC, plus later works such as Plutarch's *Life of Artaxerxes* (II) and Strabo's *Geography*. Alexander was accompanied on campaign by writers whose works have not survived except through selective appearance in later Roman histories, including those of Arrian, Quintus Curtius, Plutarch and Diodorus Siculus, all broadly aligned with Greek views of Persia. Indeed, the long-term liminal status of Achaemenid Persian studies, caught somewhere between Classical and Near Eastern

Table 11.3 Languages and writing systems of the Achaemenid Persian empire (information largely from Stolper 2005)

Language	*Language group*	*Writing system*	*Writing media*	*Role and status*	*Exemplar*
Old Persian	Iranian, Indo-European	Cuneiform; adapted script devised specifically for royal inscriptions; mixture of consonantal and syllabic signs	Royal inscriptions on stone, glazed bricks, cylinder seals; rare copies on clay tablets of royal inscriptions on stone	Used exclusively by Achaemenid kings "for the great king's display of his presence and power" (Stolper 2005: 19–20)	 Stone panel, Persepolis
Elamite	No agreed known relatives, ancient or modern	Cuneiform; adapted script; ancient language of Elam	Clay tablets; occasional royal inscriptions on stone, glazed bricks	Administration; royal inscriptions; "language of practical literacy in Iran" (Stolper 2005: 20)	 Wine ration text, Persepolis
Babylonian dialect of Akkadian	Semitic	Cuneiform; Akkadian script	Clay tablets and cylinders; royal inscriptions on stone	"Language of learning that was ancient, manifold and still productive…it connoted domination over the world beyond Iran" (Stolper 2005: 21)	 Cyrus Cylinder, Babylon
Aramaic	Northwest Semitic	Alphabetic/consonantal script with 22 characters	Inked on parchment, papyri, ostraca, occasionally on clay tablets; on portable objects such as seals, weights and coins; very rare copies on papyrus of royal inscriptions on stone (Bisotun)	Imperial *lingua franca*; used for legal and administrative matters; "under the Achaemenids its use spread to the remotest corners of the empire, from Egypt and Anatolia to Central Asia" (Stolper 2005: 21)	 Ostracon, Elephantine
Egyptian	Semitic	Hieroglyphic	Royal inscriptions on stone stelae, stone statues (of Darius from Susa), stone vessels	Used rarely, always on stone objects with high royal status	 Base of statue of Darius, Susa

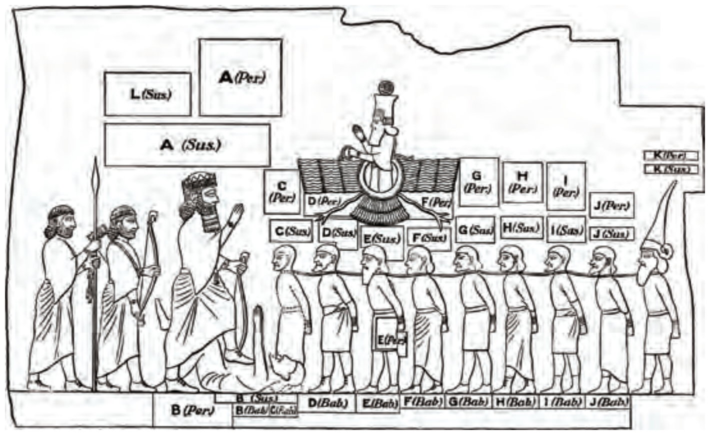


Figure 11.107 Rock-cut relief scene of Darius at Bisotun, with blocks of text indicated as Per (Old Persian); Sus (Elamite); Bab (Babylonian) (after Stolper 2005: Figure 6).

Figure 11.108 The Cyrus Cylinder, found in 1879 during Hormuzd Rassam's excavations at Babylon, on display in the British Museum, Ancient Iran gallery (© The Trustees of the British Museum).

Archaeology, may be traced to a Western predisposition towards the eloquent Greek sources and their emphasis on the barbarism and weakness of their Persian contemporaries (Root 1991; Khatchadourian 2012, 2016).

In recent decades, as the Achaemenid empire has increasingly come to be studied on its own terms, unrefracted through the Greek prism, historical attitudes have evolved away from the notion that the empire entered a long period of decline from the start of the reign of Xerxes, culminating in its collapse at Alexander's touch 130 years later, to a consideration of how the empire managed to sustain itself as an immense, complex and diverse socio-political entity for a period of more than 200 years (Kuhrt 2001). Critical to this shift of perspectives on Persia has been the work of the Achaemenid History Workshop who have produced a series of influential volumes of Achaemenid studies over a 30-year period, with the explicit intention to "dehellenise and decolonialise Persian history" (Sancisi-Weerdenburg 1987: 131; Harrison 2010).

Empires are inherently fragile entities, fraught with internal tensions, as illustrated by incessant conflict over accession to the Achaemenid throne, and external pressures from neighbouring states, polities and tribes anxious to seize a share of the wealth and power of the imperial possessions on their doorsteps. The question therefore shifts from "Why did the empire stagnate and collapse?" to "How did the empire manage to survive and even thrive for so long?" Addressing this and related socio-political questions should enable us to draw upon integrated approaches to the rich textual and archaeological evidence of the Achaemenid empire even if such approaches are still in their infancy (Khatchadourian 2012: 964, 2016).

Key to the empire's cohesion through space and time was its system of "satraps" (Jacobs 2011; Khatchadourian 2016), a Greek derivative of a Persian term meaning "protecting the kingdom" (Stolper 2005: 19). The empire was administered through provinces, or satrapies, each ruled by a satrap appointed directly by the king and residing in a grand palace. Within their extensive provinces, satraps were responsible for law and order, taxation and supply of military personnel for imperial campaigns. Provided these obligations were satisfactorily acquitted, provincial residents could enjoy considerable latitude in their daily lives as effectively summarised by Dandamayev (1999: 280–281):

> In the whole, the subjects of the Achaemenids lived in a rather moderate ideological climate and felt much less pressure of official ideology and religious doctrines than it was characteristic of later periods of history…The Persian authorities were only concerned with creating a stable administration and establishing an efficient system for collecting royal taxes.

Provincial palaces hosted archives of texts relating to local and imperial matters, often protected by clay seals bearing seal impressions that have been found in quantity at sites as far-flung as Daskyleion in western Phrygia and Artašat in Armenia (Kuhrt 2001: 115). Below the level of satraps, Persian provincial administration drew heavily on pre-existing local mechanisms of government and control. The importance to the Achaemenids of long-distance communication in sustaining a coherent empire is vividly attested through the Persian system of roads, such as the famous Susa to Sardis Royal Road (Figure 11.106), with way stations along the route at one-day intervals and strategically located guard posts, a trans-imperial system of communication developed above all under the rule of Darius (Graf 1994; Tallis 2005; Brosius 2006: 53–58; Henkelman 2017). Occasionally, satraps were tempted to revolt against the central authority, most notably in the "great revolt of the satraps" in western Anatolia in the mid-4th century BC, but such revolts never seriously threatened the integrity of the empire.

What can archaeology tell us about the nature of this globally significant political power, the Achaemenid Persian empire? As discussed in Chapter 3, the development of the archaeology of the Achaemenid empire in Iran was a vital strand in the modern history of Iran as a nation, with the dramatic discoveries at Persepolis in particular forming a key episode in the articulation of Iranian identity (Stronach 1986 provides a clear account of the history of Achaemenid archaeology). With regard to the empire's material remains, as Curtis (2005c: 30) points out, across much of the empire we can identify selected components of an Achaemenid "court style" in elite architecture, dress, weapons and jewellery but at the humbler, everyday level it is much harder to characterise specifically Achaemenid material culture, including pottery apart from a few high-status forms such as fine carinated bowls (Stronach 1986; Boucharlat and Haerinck 2011). For this reason, multi-period regional surveys within the territories of the Achaemenid empire, core or periphery, are likely to under-represent the Achaemenid presence (Matthews 2009: 155–156; Henkelman 2012: 935–939 provides an excellent summary of survey data relevant to the Achaemenid period). It has been suggested that Achaemenid rulers sought to "play down the conspicuous presence of Persian power in the provinces on a variety of social/cultural levels" as a strategy of provincial management (Root 1991: 3), adapting to local social and material culture traditions rather than replacing them or surmounting them with externally imposed imperial fashions. Moreover, we need to pursue nuanced approaches to articulating the evidence for Achaemenid impacts on regions under imperial control, searching for "more subtle forms of social re-engineering within materially constituted sociopolitical worlds" (Khatchadourian 2012: 964).

Not surprisingly the majority of our archaeological knowledge comes from Fars, the core region and an administrative unit of the empire, hosting the capital cites of Pasargadae and Persepolis (Boucharlat 2005). The Achaemenid name for the region was Pārsa, a region extending well beyond the modern province of Fars (Henkelman 2012: 931). In addition to the major imperial centres discussed below, archaeological evidence for dams, canals and sluices across the region provides some indication of the huge imperial investment in the agricultural and horticultural development of the land of Pārsa (Henkelman 2012: 959–960), detectable in lake core evidence from Lake Parishan in Fars, which shows a spike in the representation of cultivated trees, including olive, at this time (Jones *et al.* 2015). One text from Persepolis mentions the planting of 6,166 seedlings of fruit trees, including apple, date, mulberry, olive, pear, pomegranate and quince, all of which would require significant development of irrigation capacity across the plains of Fars (Henkelman 2013: 528, 539). The intersection of two major royal roads running north-south and east-west across Fars, along with associated way stations and well-appointed residences or "pavilions" at various points in the landscape further underline the key importance of Fars to the economic development and administrative core of the Achaemenid state (Henkelman 2012: 939). Despite these indications, summed results from archaeological surveys across the Achaemenid heartland depict "a region dotted with smaller and larger sites, yet significantly less densely populated than it had been in the early and middle second millennium BC" (Henkelman 2012: 938). Apparently empty zones may however be the result of the agglomeration of populations in major centres with associated intensification of irrigated agriculture in surrounding arable zones, as happened in the environs of Susa (Adams 1962; Henkelman 2012: 939). Rescue archaeology in the **Tang-e Bolagi** region southwest of Pasargadae (Atayi and Boucharlat 2009) in advance of construction of the Sivand Dam recovered evidence for Achaemenid occupation at several sites, including rural settlements, small "pavilions" (Figure 11.109), fortified structures and rock-cut canals, shedding so far unique light on a rural landscape within the Achaemenid heartland (Askari Chaverdi and Callieri 2006, 2016).

Cyrus the Great founded **Pasargadae** on the Dasht-e Morghab, at 1900 m above sea level, an appropriate setting for the grandeur of his newly assembled empire (Stronach 1978; Boucharlat 2001, 2005, 2013a: 506–511, 2014; Henkelman 2012: 940–943). The first excavations at the site were conducted by Herzfeld (1929–30a) followed by Ali Sami (1956) and a major series of campaigns led by David Stronach for the British Institute of Persian Studies (Stronach 1963, 1964, 1965, 1978, 1989). Pasargadae has been a UNESCO World Heritage site since 2004 (Mozaffari 2014). Built between 545 and 530 BC, Pasargadae is essentially an unfortified, open-plan garden city or royal park covering 250–300 ha (Stronach 2001; Boucharlat 2013a: Figure 26.1; Gondet *et al.* 2019), with two large but simple palaces and two smaller pavilions framing a rectilinear schema of laid gardens and associated water channels (Figure 11.110). In the hinterland of Pasargadae there are traces of well-constructed earth dams, canals and stone conduits with sluices showing a major concern with water management for the site (Boucharlat 2013a: 510, 2017; Chambrade *et al.* 2020). The distinctive layout of the Central Gardens, divided into four parts, set the template for future Persian gardens in the so-called *chahar bagh* style ("four gardens"; Figure 11.111) (Stronach 1989; Boucharlat 2009b). Other large structures have been identified through geophysical survey (Boucharlat 2002; Boucharlat and Benech 2002), and to the northeast of the Central Gardens there lies a 30 ha area bounded by a mudbrick wall within which magnetometer prospection and drone photography after snow have revealed regular blocks of square buildings that may be military or workers' barracks (Boucharlat 2019: 33–34). The palaces in the Central Gardens area were clearly not residential but rather served as massive audience halls or settings for major official ceremonies (Figure 11.112).

Cyrus' achievement at Pasargadae was to build large structures in stone, quarried from a range of local sources (Emami *et al.* 2018), not an architectural tradition native to this region, importing stone masons, artisans and stylistic influences from western (Greek) Asia Minor, Assyria and Egypt (Henkelman 2012; Garrison 2013). The use of multiple stone columns, often with contrasting black and white colours, in all the structures at Pasargadae echoes the Median practice of multi-columned halls. The main entry to Pasargadae would have been through the free-standing Gate R, originally flanked by Assyrian-style winged bulls and with door jambs adorned in relief by a winged genie wearing an Egyptian crown (Figure 11.113). A trilingual inscription in Old Persian, Elamite and Babylonian stating simply "I, Cyrus, the king, an Achaemenian" was probably added later by Darius I (Boucharlat 2013a: 510). At the entrance to the Audience Hall the depiction in sculpted stone of two fish-garbed men, unique in Achaemenid art, indicates a direct influence from Assyria where fish-garbed priests were set as guardians protecting doorways, as for example in Sennacherib's palace at Nineveh (Kawami 1972).

To the northeast of the Central Gardens a 30 m-high hill is topped by a massive ashlar masonry platform known as Tall-i Takht or "Throne Hill" (Figure 11.114) upon which brick buildings were constructed in the reign of

Figure 11.109 Tang-i Bolaghi, excavated Achaemenid pavilion (Atayi and Boucharlat 2005: Figure 6) (image courtesy of Joint Iran-France team in Tang-i Bolaghi, with permission of Mohammad Atayi and Rémy Boucharlat).

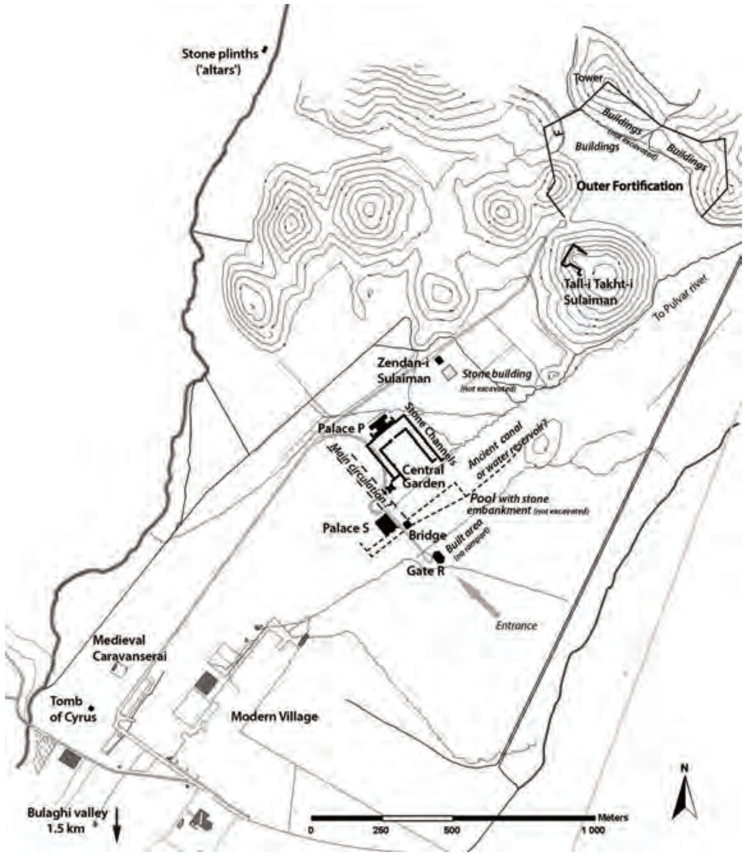


Figure 11.110 Pasargadae, plan of the site showing the principal monuments (Boucharlat 2013a: Figure 26.1) (image courtesy of Joint Iran-France mission at Pasargadae).

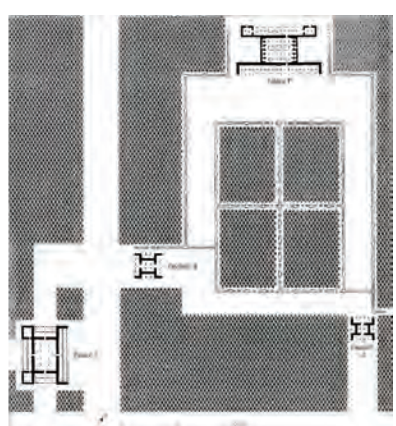


Figure 11.111 Pasargadae, plan of the palace and formal garden area (after Curtis 2005c: Figure 8).

Darius I (Stronach 1965: Figure 4). 350 m southwest from the Tall-i Takht stands an apparently isolated 14 m-high tower, the Zendan-i Suleiman, matched by a similar tower at the royal tomb site of Naqsh-e Rustam near Persepolis. An unexcavated large stone building sits adjacent to this tower at Pasargadae (Boucharlat and Benech 2002: Figure 12). 1 km further southwest from the Central Gardens, the Tomb of Cyrus stands in magnificent isolation (Stronach 1964: 21–28). The tomb takes the form of a gabled house surmounting a six-stepped stone platform (Figure 11.115) in style influenced by Lydian and Carian tombs from Asia Minor. In its day this tomb would have been richly furnished with the burial itself and accompanying grave goods, long since gone, and at the time of Alexander

Figure 11.112 Pasargadae, view of Palace P from the air (Boucharlat 2019) (image courtesy of B. N. Chagny, Joint Iran-France mission at Pasargadae).

Figure 11.113 Pasargadae, Gate R stone relief of winged genie with Egyptian crown (after Curtis 2005c: Figure 10) (permission courtesy of John Curtis).

Figure 11.114 Pasargadae, Tall-i Takht (photo credit: Roger Matthews).

Figure 11.115 Pasargadae, Tomb of Cyrus (Boucharlat 2019) (image courtesy of Joint Iran-France mission at Pasargadae).

Figure 11.116 Pasargadae, selected items from jewellery hoard, 5th–4th centuries BC (after Stronach 1978: pls 147a, 148a, 150a–150b).

it was tended by a house of priests. The most significant finds from Pasargadae include a remarkable hoard of jewellery (Figure 11.116) buried in a pot under a Central Gardens pavilion (Stronach 1965: 31–40, pls. X-XIV; Curtis 2005c: 33). The hoard comprised more than 1,000 objects including gold ibex-headed bracelets, miniature gold bells, gold earrings and necklaces, dating to the 5th–4th centuries BC. A single cylinder seal was recovered (Root 1999). Pasargadae continued to be occupied throughout the Achaemenid period and beyond into Hellenistic times.

Three Achaemenid palaces at **Borazjan** (Figure 11.117), northeast of Bushehr on the Persian Gulf coast were also probably built by Cyrus the Great, with significant architectural parallels to buildings at Pasargadae (Sarfaraz 1971; Karimian 2011; Henkelman 2012: 939–940; Zehbari 2020). The palaces each comprise a pillared hall with

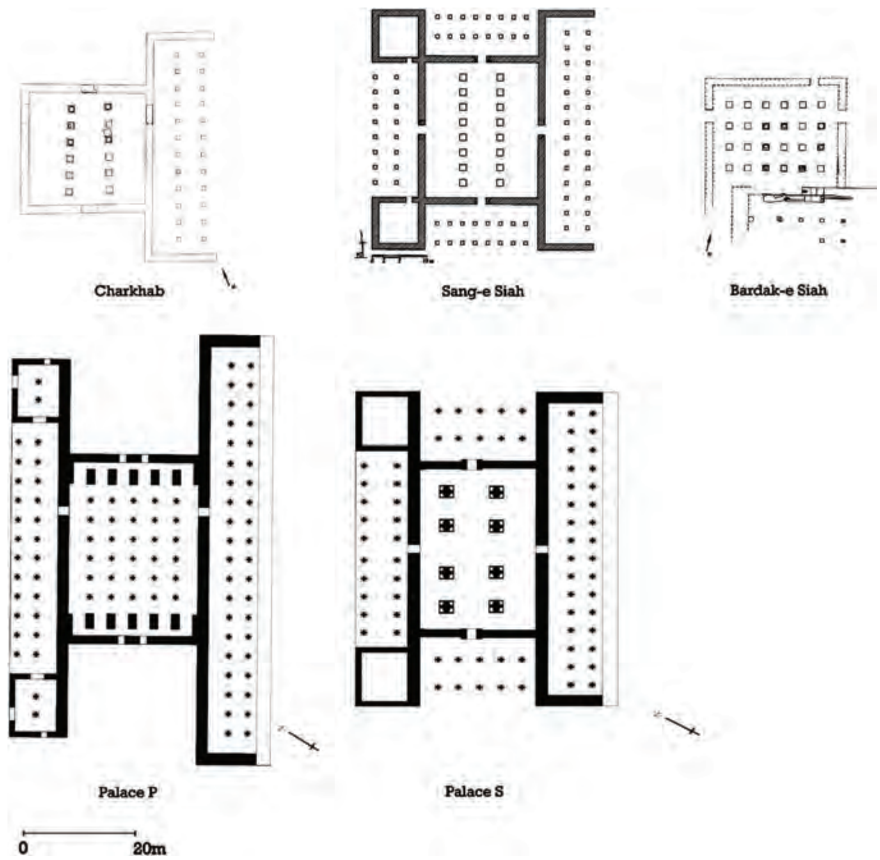


Figure 11.117 Borazjan, Achaemenid palaces compared to Pasargadae palaces (after Zehbari 2020: Figure 49).

Figure 11.118 Borazjan, fragment of relief scene with parasol shielding royal Figure (after Zehbari 2020: Figures 31–32).

column bases utilising alternating black and white stones, originally surmounted by wooden columns decorated with plaster mouldings, comparable to the practice at Pasargadae. Within the Charkhab Palace an unusual deposit of carved fragments of human and animal teeth, eyes, nails and claws had been set 2 m deep under the floor, evidence for specialist craft activity here (Karimian 2011). At the Bardak Siyah Palace, 13 km northwest of Charkhab, folded gold plates and cups were deliberately hidden under a column base, and there is also an exceptionally fine piece of carved black stone depicting what must be a royal figure under a parasol remarkably similar to scenes of Darius I at Persepolis (Figure 11.118) (Karimian 2011: 43; Zehbari 2020: Figures 31–32). Evidence of burning plus many bronze arrowheads suggest that the Bardak Siyah Palace may have been destroyed during the Macedonian campaigns that brought the empire to an end. Sang-e Siyah Palace, 10 km north of Charkhab, again has a layout similar to the Pasargadae palaces but in this case the palace appears not to have been completed as there is no trace of either a floor or a ceiling. The location of these palaces shows the interest of Cyrus in gaining access to the sea routes that enabled navigation directly into Lower Mesopotamia and Babylon.

While occupation continued at Pasargadae, Darius celebrated his victory over Gaumata and other revolts across the empire in the famous **Bisotun** relief, the outstanding instance of early Achaemenid royal display and art (Figures 11.107, 11.119) (Luschey 1968, 2013; Root 1979; Vallat 2011a; Garrison 2013; Potts 2016: 313–318; Jacobs 2017). Situated on a sheer rock face 66 m above the plain east of Kermanshah in western Iran, the Bisotun relief stands proud over the Great Khorasan Road connecting Central Asia to the east with Mesopotamia to the west. Cuneiform inscriptions adorn the figured scenes, with blocks of text in Old Persian, Babylonian and Elamite (Schmitt 2013). The Old Persian text is the earliest attested use of this script, which seems to have been created expressly for this purpose, as Darius himself states: "Says Darius the king: by the will of Ahura Mazda that is my script, which I made" (Potts 2016: 314–315). The monument was planned and executed, with some modifications as work progressed, over the period 521–519 BC. The Bisotun relief shows the king, backed by two dignitaries, holding a bow and with one foot resting on the chest of a supine defeated enemy. To the right stand nine manacled and roped figures representing defeated "liar kings," depicted in chronological order of the date of their defeat by Darius, their diminished status graphically demonstrated by their smaller stature compared to that of Darius and his two allies. Overseeing the entire scene is a depiction of Ahura Mazda in the form of a winged disc with anthropomorphic figure closely modelled on the figure of the king. Inspiration for Darius's Bisotun relief came from his encounters with much earlier rock-cut reliefs such as the *c.* 2000 BC Sar-i Pol I relief of Anubanini, king of the Lullubi, at Sar-e Pol-e Zohab 150 km to the west along the same Great Khorasan Road, and drawing on knowledge of Assyrian palace reliefs of Nimrud and Nineveh, the latest of which date to only a century prior to the Bisotun relief.

A UNESCO World Heritage Site since 2006 (Figure 11.120), the Bisotun relief and its associated trilingual inscriptions, fundamental to the early decipherment of languages in the cuneiform script (Larsen 1996) including Old Persian (Tavernier 2013b), stands out as "the only Achaemenid monument that unambiguously seeks to commemorate known and specific historical events" (Garrison 2013: 575). Supplementing this statement, Wu (2014) proposes that depictions of warfare scenes on certain Achaemenid seals and other media might be relatable to specific historical events. A second rock carving by Darius exists at **Ganj Nameh**, 12 km southwest of Hamadan,

Figure 11.119 Bisotun, rock relief of Darius, 520–519 BC (Briant 2005: Figure 2) (permission courtesy of John Curtis).

Figure 11.120 Bisotun, celebrations in November 2006 to mark its accession to the UNESCO World Heritage List. Darius's relief is visible top centre (photo credit: Roger Matthews).

on the lower slopes of Mount Alvand near a springhead (Figure 11.121). Inscriptions here in Old Persian, Elamite and Babylonian glorify Darius and praise Ahura Mazda, augmented by a later panel of Xerxes (Curtis 2005c: 39).

Darius I marked the consolidation of his rule through the foundation in 520–515 BC of a new capital and royal residence at Persepolis (Parsa in Old Persian), also in Fars. The Persian king appears not to have resided permanently in any specific city, but moved according to season and administrative or military requirement from one royal residence to another, thus governing as “an itinerant State” (Briant 2002: 187; Boucharlat 2013a: 512). Other royal residences and pavilions were established at Susa (see below), Babylon (Haerinck 1997; Gasche 2013; Curtis 2020) and Ecbatana, at least, but as yet we have no archaeological knowledge of Darius’s palaces or other significant Achaemenid buildings at Ecbatana (Hamadan) beyond out of context evidence for a columned palace of Artaxerxes II (Knapton *et al.* 2001; Curtis 2005c: 39).

Figure 11.121 Ganj Nameh, inscriptions of Darius and Xerxes (photo credit: Rokita).

Figure 11.122 Persepolis, view of terrace from the east, Hall of 100 Columns centre right (photo credit: Roger Matthews).

Excavated by Herzfeld in 1931–1934, by Schmidt in 1934–1939 and by a succession of Iranian archaeologists including Ali Sami, Tadjvidi and Mousavi since, **Persepolis** is one of the great sites of the ancient world, like Pasargadae a UNESCO World Heritage Site (Schmidt 1953, 1957, 1970; Tadjvidi 1976; Roaf 1983, 2004; Mousavi 1992; Henkelman 2012: 943–950; Boucharlat 2013a: 512–517; Khatchadourian 2016: 105–112). The ruins are unevenly distributed over an area of some 20 km^2, comprising a massive terrace with multiple structures (Figures 11.122–11.123), the royal burial site of Naqsh-e Rustam 6 km to the north, and loosely arranged quarters in between. The royal and elite residential areas were located below, not on, the great terrace, some of which have been located, including the column bases of a porticoed palace north of the Persepolis terrace (Tilia 1974, 1978; Henkelman 2012: 948). In the area south of the terrace, known as Persepolis South (Figure 11.124), there are several large stone buildings with hypostyle halls, porticos and courtyards, one with an inscribed column base of Xerxes, while the terrace itself appears to have been protected by a mudbrick fortification cresting the ridge to the east (Tadjvidi 1976; Mousavi 1992, 2012). Much of the occupied region of Persepolis remains unexplored and we would expect there to be quarters for administration, military and craft activity, as well as gardens and water conduits. Evidence across the Marv Dasht for the development of dams, banks and canals indicates a significant regional intensification of activity in association with the construction and occupation at Persepolis.

Survey and excavations in area of the plain known as Persepolis West (Figure 11.124), first investigated by William Sumner (1986b), have explored the so-called "town" settlement appended to the nearby royal terrace, more broadly identified as the "Persepolis settled zone" (Talebian 2008; Boucharlat *et al.* 2012; Askari Chaverdi *et al.* 2017). Excavations have revealed extensive craft areas with ceramic kilns, possible gardens, and evidence for occupational continuity spanning the Achaemenid and post-Achaemenid periods, also attested in the Tang-i Bolaghi region near Pasargadae (Askari Chaverdi and Callieri 2016), supporting an interpretation of settlement continuity at the rural level in spite of dramatic changes brought about at the palace level by the Macedonian conquerors in the 330s BC including the torching by Alexander of the Persepolis Terrace itself.

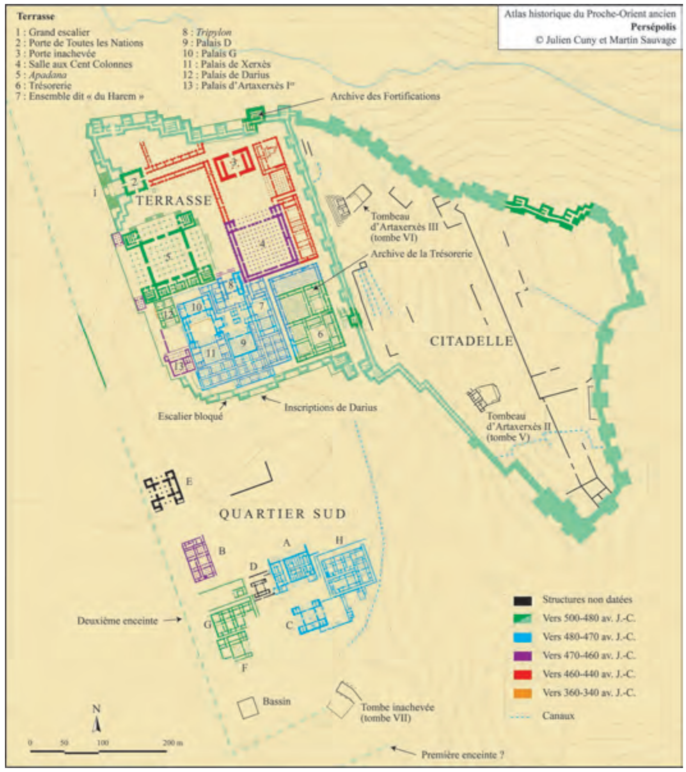


Figure 11.123 Persepolis, plan of the major buildings on the terrace (Sauvage 2020: 136) (image courtesy of Julien Cluny and Martin Sauvage).

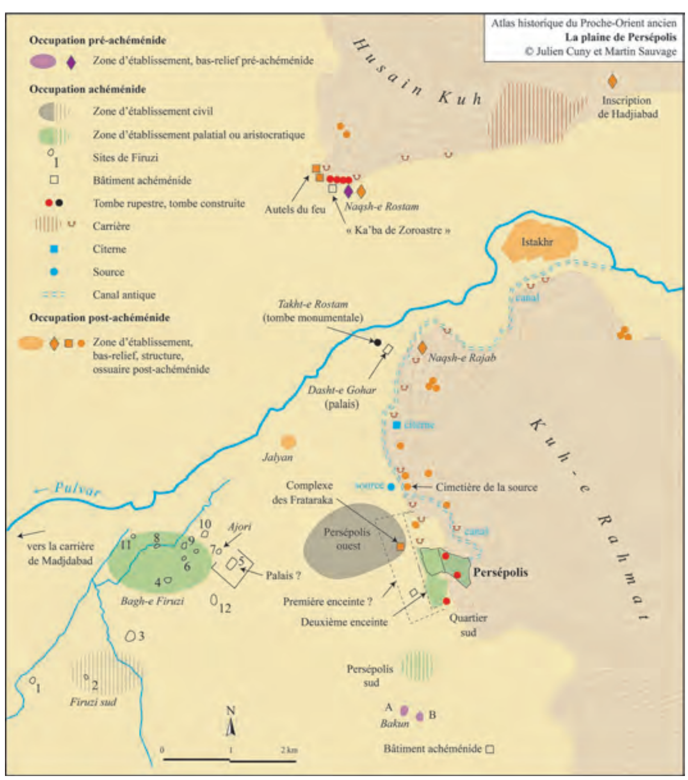


Figure 11.124 Map of the Persepolis area to show major features (Sauvage 2020: 137) (image courtesy of Julien Cluny and Martin Sauvage).

Of major significance is the site of **Tol-e Ajori** in the area of Bagh-e Firuzi, *c.* 3 km west of the Persepolis Terrace, where excavations have uncovered the extraordinary remains of a copy in slightly larger dimensions of the Ishtar Gate at Babylon, constructed in the early Achaemenid period according to Babylonian building traditions (Figure 11.125) (Askari Chaverdi *et al.* 2013, 2014, 2017). It seems probable that the Tol-e Ajori Gate provided access to a nearby monumental building complex detected at foundation level in the Bagh-e Firuzi area, where monumental column bases had previously come to light (Tilia 1974: 203). Tol-e Ajori comprises a small low mound with surface traces of glazed brick suggestive of an elite construction of some sort. Geophysical prospection and excavation show that the site consists of a single large rectangular building 29 × 39 m in plan. Its walls have a 5 m-wide mudbrick core encased within 2.5 m-wide baked brick skirts, in turn faced on the interior and exterior with white, yellow and brown glazed bricks, many of them bearing fitters' marks in white paint in a manner precisely like that used by builders at the Palace of Darius at Susa (Daucé 2010; Maras 2010).

Amongst the collapsed material from the Tol-e Ajori building's end of life the excavators found several fragments of glazed bricks decorated in relief plus one brick with a single painted cuneiform sign of SAR/ŠAR perhaps from the Babylonian word *šarru* "king" while another brick bears the sign KÁ, an Akkadian logogram for "gate" (Figure 11.126) (Basello 2013, 2017). Several of the glazed bricks bear relief elements that can be directly compared with glazed relief bricks from the Ishtar Gate at Babylon, including parts of bulls and the *mušḫuššu* dragon, sacred respectively to Adad and Marduk at Babylon, both of which feature prominently on the Ishtar Gate itself in both glazed and unglazed brick form (Figure 11.125) (Marzahn 2008). The Tol-e Ajori Gate bears remarkable resemblance to the famous Babylon Ishtar Gate in its scale, method of construction and decorative schema, vividly demonstrating a significant influence of Babylonian style on early Achaemenid architecture. Moreover, study of the glazing technology of bricks from Persepolis suggests possible borrowing of this technology from Babylonian experts, albeit applied to differing materials – baked mudbricks in Babylonia, sintered quartz in Persia (Holakooei *et al.* 2017). Darius I tells how Babylonian craftworkers were employed in mudbrick-working for his palace at Susa.

Figure 11.125 Tol-e Ajori, site plan, view, decorated bricks and bricks with fitter's marks (Askari Chaverdi *et al.* 2017: pls 1, 4b, 10a–10b, 14a–14b) (images courtesy of Iranian-Italian Joint Archaeological Mission in Fars).

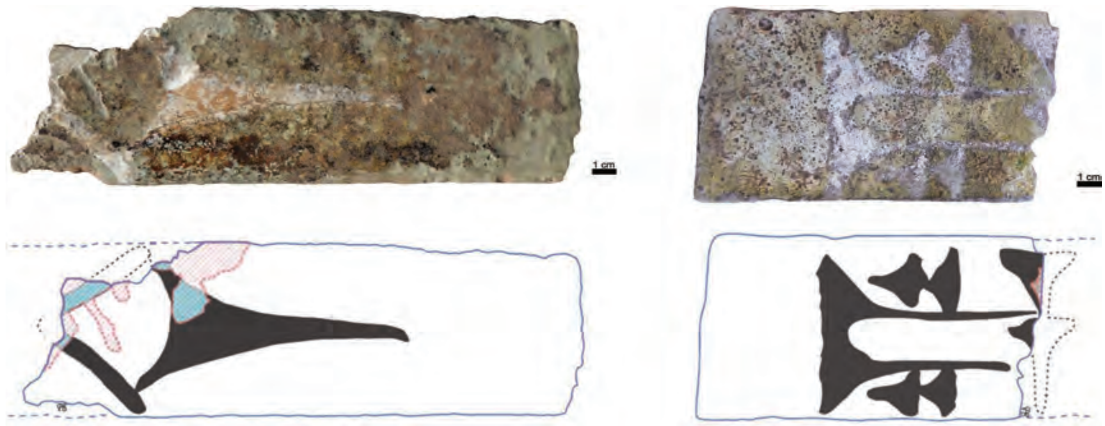


Figure 11.126 Tol-e Ajori, glazed brick fragments with cuneiform inscriptions (Basello 2017: pls 2a, 3a) (images courtesy of Iranian-Italian Joint Archaeological Mission in Fars).

The **Persepolis Terrace** as we see it today represents, subject to the impacts of time, archaeology and skilful Iranian-Italian restoration (Tilia 1972, 1978), the cumulative vision of successive Persian kings from Darius I to Artaxerxes III over a period of almost 200 years (Figure 11.123) (Roaf 1983: Figures 152–157). For much of that time the terrace would have been a massive building site, with scaffolding, ramps and constant movement of labour and materials to and from the site, with all the accompanying dust, noise and smells necessitated by any large-scale construction work. The sense of unified grandeur that we experience in visiting the site today would have become dominant only some 60 years after the start of building in *c.* 515 BC, well into the reign of Artaxerxes I (Roaf 1983: 159). The whole enterprise betokens dynastic ambition and confidence on an epic scale. Most of the buildings, many of which would have contained significant wooden components, succumbed to Alexander's torch in 330 BC. Evidence for post-Achaemenid use of Darius' Palace and Palace H on the south-western corner of the terrace likely dates to the Sasanian period (Roaf 1983: 158, Figure 157).

The royal terrace at Persepolis is even today an awe-inspiring sight (Shahbazi 2011 is an excellent guide). One can only imagine the feelings it must have inspired in visiting dignitaries, courtiers, local farmers and all the inhabitants of the empire who had the opportunity to see it, even if from afar. The terrace nestles on its east side into the slope of the mountain Kuh-i Rahmat for a distance of *c.* 450 m and stretches out onto the plain for *c.* 300 m. A 14 m-high retaining wall of massive limestone blocks defines the eastern limit of the terrace against the mountain face. Stone for building the terrace and its massive monuments was quarried both from the adjacent mountain and also, for higher quality material used in reliefs, from a site 40 km distant to the west (Shahbazi 2011: 223–224; Guidi *et al.* 2012; Boucharlat 2013a: 515; Gondet 2015). All the buildings on this terrace served ceremonial and official functions – none of them were truly residential (Razmjou 2010; Razmjou and Roaf 2013).

Darius' original plan seems to have been to leave much of the terrace open, adorned by gardens and open courts. Early buildings on the terrace include the square Apadana with its massive columned hall, the columns 19 m high and capitals all made of stone (Figure 11.127). Recent analysis reveals the surprising fact that many of the stone surfaces at Persepolis were coated in a thin application either of gypsum or of fluorapatite formed from large-scale burning of animal bones, both of which would have given a fine white finish to the stone surfaces (Askari Chaverdi *et al.* 2016; Ridolfi *et al.* 2019). A kiln and associated waste pits at Persepolis West appear to have been used for production of fluorapatite from the ash of animal bones (Askari Chaverdi and Callieri 2012), but the precise aim in adorning the cut stone in this way is not clear.

A large square room, 53 × 53 m with six rows of six columns, forms the central space of the Apadana adjoined by double-columned porticos on three sides. Originally the Apadana had mudbrick walls 5 m thick. Remarkable foundation deposits comprising inscribed gold and silver tablets, Cypriot, Greek and Lydian coins and pieces of amber were found buried in two corners of the Apadana (Nimchuk 2010). Adorning the staircases of the Apadana on its northern and eastern sides, is a scheme of carved reliefs (Figures 11.128–11.129), eschewing narrative and thereby not confined to specific time and place, but rather designed to portray, literally set in stone, the time- and space-defying power, wealth and diversity of the empire and its king(s) (Root 1979; Calmeyer 1980; Roaf 1983; Khatchadourian 2016). Carving the relief scenes would have been a time-consuming process taking place probably over several years, and employing sophisticated stone-working tools and techniques from roughing out to fine finishing carried out by Persian and non-Persian craft workers (Roaf 1980; Roaf 1983: 3–9; Askari Chaverdi *et al.* 2016).

Figure 11.127 Persepolis Terrace, Apadana viewed from the northeast, with Palace of Darius behind (photo credit: Roger Matthews).

Figure 11.128 Persepolis Terrace, Apadana, relief scenes on eastern side (photo credit: Roger Matthews).

The reliefs depict Median and Persian guards and nobles leading 23 delegations of peoples from the satrapies of the empire in symmetrical arrangements, dressed in their regional costumes and bearing gifts and offerings typical of their localities, including weapons, metal and ceramic vessels, animals, animal skins and textiles, all in all "a veritable ethnographic museum" as it has been described (Dandamaev and Lukonin 2004: 251; Gropp 2009). These guards, nobles and delegations originally marched on both staircases towards a central royal audience scene depicting an enthroned king, with a standing crown prince behind him and attendant Palace Guards.

The Apadana relief scenes have been explicated in such exquisite language by Margaret Cool Root (2011: 424–425) that a lengthy quote will not go amiss:

> the Apadana fabricates a moment of supreme liminality that is legible with variant subtexts drawn from (and meant to speak to) peoples from different cultures with a sustained, multi-referential message. The moment describes the imminent, inexorable move of the petitioners from one state of being to another. It is a moment of "voluntary" submission in which all depends upon the assessment of the petitioners by the higher authority… The promise of positive outcome rests in the degree to which the king will judge the petitioners and their gifts worthy of incorporation into the project of the new way of being. If all goes to plan, the exchange will be parithetic. The value of voluntary cooperation will be realized through the king's generous compensation for goods and services in the form of symbolic kinship with the ruler and his dynastic mission. On the Apadana, each petitioning group is a notional construction of a people imbued with a set of innuendoes about imperial reach, historical legitimacy, cultural memory, and ordained future.

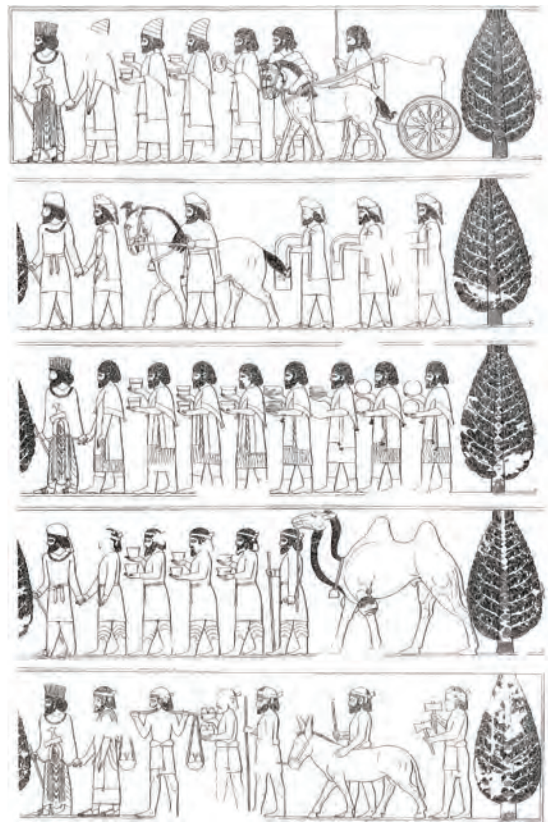


Figure 11.129 Persepolis Terrace, Apadana, relief scenes on northern side (after Curtis and Razmjou 2005: 65; drawings by Ann Searight) (permission courtesy of John Curtis).

Bruce Lincoln (2008: 233) strikes a similar tone in his interpretation of these scenes as betokening a "theology of empire" whereby the king "reunites the world and restores its perfection." This perfect, united world is, however, exclusively male at least in its formal representation in the Persepolis reliefs. Notably absent from these scenes, and from all other instances of official or monumental Achaemenid art, are depictions of women, who are primarily attested in small-scale media such as seals, metalwork and ivories (Brosius 1998; Daems 2001: 42–46; Lerner 2010).

At a later stage, during the reign of Artaxerxes I, the central royal audience scene panels were removed from the Apadana staircases, stored in the Treasury on the terrace where Schmidt excavated them (Shahbazi 2011: Figures 38–39), and replaced by a scene depicting Median and Persian soldiers facing a blank panel probably intended to receive inscriptions that were never cut into the stone. Flanking these central scenes, the classic motif of a lion attacking a rearing bull is finely carved (Figure 11.130). Amongst the many interpretations of this motif, the idea that it may refer to the precession of the equinoxes whereby the zodiacal zone of Taurus succeeds Leo as happened in *c.* 500 BC at the spring equinox, also the time of Nawrouz or New Year as in the modern Iranian calendar, has some traction (Shahbazi 2011: 103–104), despite the lack of other evidence for the significance of Nawrouz at Persepolis (Calmeyer 1980).

The terrace was accessed through a massive double staircase at the north-western corner, constructed of massive limestone blocks joined by metal clamps, leading to the Gate of All Nations with its flanking double pairs of bearded, human-headed, winged bulls and four columns, capped by back-to-back kneeling bulls (Figure 11.131). The gate, built by Xerxes, originally included mudbrick walls adorned with glazed tiles (Shahbazi 2011: 36–45). Passing by the Fortification Walls, a visitor would next encounter the Unfinished Gate before entering the Hall of 100 Columns (Figure 11.122), all of which would have been mounted by double-bull capitals, and further grand structures including the Central Building, the Harem, the Treasury and the Palaces of Darius and Xerxes. All these building names originate in Herzfeld and Schmidt's often fanciful identifications of the possible roles of each structure on the Persepolis Terrace and should not be taken as genuine indications of the function of any of the buildings (Razmjou 2010).

Figure 11.130 Persepolis Terrace, Apadana, relief scene on eastern side of lion attacking bull (photo credit: Roger Matthews).

Figure 11.131 Persepolis Terrace, Gate of All Nations from the northeast (photo credit: Roger Matthews).

Many of the doorjambs of the terrace buildings bear carved scenes depicting the king with attendants or the king fighting bulls, lions or griffins (Figure 11.132). There are also scenes carved into platforms and staircases of these buildings, reiterating the themes of imperial wealth, power and diversity attested on the Apadana reliefs. Shahrokh Razmjou's interpretation of the so-called palaces and other buildings on the terrace concludes that none of them were used for residential purposes beyond short-term hosting of royalty, court and distinguished guests attending official meetings and ritual ceremonies hosted by the king and enacted within the site's magnificent setting (Razmjou 2010).

We should stress the major role of colour in Achaemenid elite display (Moorey 1998), especially at Persepolis and Susa, as materialised through painted wooden and plaster surfaces, dyed textiles and wall-hangings, glazed bricks and tiles, and inlays of materials such as gold, silver, lapis lazuli and limestone. The presence of vivid colours on the Persepolis reliefs is frequently commented on in Ernst Herzfeld's records and letters composed on the spot as he excavated at Persepolis: "It seems rather that all reliefs were entirely painted in brilliant, alternating colors, perhaps on the polished, black ground. What a strange impression this must have been!" (cited in Nagel 2013: 605; Roaf 1983: 8). Elemental analysis of surviving pigments on the Persepolis reliefs has identified use of Egyptian blue, red ochre, realgar and cinnabar (Ridolfi *et al.* 2019).

Thousands of clay tablets were excavated at Persepolis in two rooms of the Fortification Walls at the north end of the terrace, the so-called Persepolis Fortification Archive (Figure 11.133) (Hallock 1969; Razmjou 2008; Lawler 2012; Henkelman 2013; Basello and Giovinazzo 2018: 489–492). The vast majority of the approximately 15,000 texts are in the cuneiform Elamite language but a significant proportion, some 800 tablets, bear inscriptions solely in Aramaic either incised or inked onto the clay surfaces while a further 250 texts have short Aramaic texts inked alongside Elamite inscriptions (Henkelman 2013: 532). There are also single texts in Greek, Old Persian, Akkadian and Phrygian. Many of the tablets bear seal impressions, with more than 3,000 different seals providing "the richest corpus of Achaemenid glyptic and of Achaemenid iconographic material at large" (Figure 11.134) (Henkelman 2013: 533), a vivid indication of the engagement of multiple seal-bearing actors within this highly organised system of administration and rural production (Zettler 1979; Garrison 1991, 2000, 2010, 2011, 2013, 2017; Garrison and Root 2001; Root 2008). The Persepolis fortification texts date from the years 509–493 BC, Darius I years 13–28, and deal exclusively with administrative matters including receipt, storage and disbursement of goods and animals to members of the royal family and the court, organisation of groups of temple staff, labourers, artisans and farmers. These documents thus provide a wealth of information regarding the administration of agricultural production and distribution within the hinterland of a major capital city and

Figure 11.132 Persepolis Terrace, Palace of Darius doorjamb relief showing the king slaying a lion (photo credit: Roger Matthews).

Figure 11.133 Cuneiform tablets in Elamite from the Persepolis Fortification Archive relating to rations and cattle (Meadows 2005: 197) (permission courtesy of John Curtis).

Figure 11.134 Cuneiform tablet with seal impression depicting a mounted warrior attacking enemies. Inscription on the left names "Kurash, the Anshanite, son of Teispes," probably an ancestor of Cyrus the Great (Meadows 2005: 197) (permission courtesy of John Curtis).

royal residence. Several hundred texts and fragments were also found in the so-called Treasury of Persepolis, dated to the years 492–457 BC, thus slightly later than the Persepolis Fortification Archive. The Treasury texts are concerned to record payments of silver, occasionally in lieu of food rations in the form of sheep, wine, beer and barley, to skilled craft workers (Hallock 1960; Basello and Giovinazzo 2018: 492–494). Much smaller text collections have also been found at Susa.

Figure 11.135 Naqsh-i Rustam, tombs of Darius I, Xerxes and Artaxerxes I (photo credit: Roger Matthews).

Above the Persepolis Terrace on the east and cut into the rock-face of the Kuh-i Rahmat are three tombs, believed to belong to the kings Artaxerxes II, Artaxerxes III and Darius III (Curtis 2005c: 35; Shahbazi 2011: 213–216). The facades are in the form of buildings with columns and double-bull protomes supporting a beamed and denticulated roof. At **Naqsh-e Rustam** 6 km northwest of the Persepolis terrace, there are four more massive tombs of the Achaemenid kings (Figure 11.135), including Darius I, Xerxes, Artaxerxes I and probably Darius II, of which only that of Darius I bears inscriptions including identification labels for each of the delegates depicted carrying the gigantic throne on which the king stands, directly above a building façade. At least some of these scenes appear to have been illustrated in brilliant colour, as with many of the Persepolis reliefs (Nagel 2013: 608). The king stands in front of a fire altar with the representation of a figure emerging from a circle with wings, a scene that is now believed not to represent the god Ahura Mazda but the "royal fortune/luminous glory" granted by Ahura Mazda to the king (Gnoli 1999; Boucharlat 2013a: 517). The tomb itself with in-built sarcophagi is located in chambers accessed through the middle of the facade – needless to say, no trace of the tombs' contents remains. A tower similar to that at Pasargadae accompanies the royal tombs at Naqsh-e Rustam, while at nearby Takht-e Rostam a stone platform may have been intended to support the tomb of Cambyses II (530–522 BC). Some 100 km south of Persepolis, the site of **Farmeshgan** has yielded remains including sculpted stone blocks and footings of columned buildings and a pavilion in use through much of the empire's life, interpreted as a major stopping point on a route of imperial seasonal migration (Razmjou 2005b).

Outside the core region of Fars, the most important location for Achaemenid monumental construction was the ever-important site of **Susa** in Khuzestan (Figure 11.136) (Stronach 1974; Muscarella *et al.* 1992; Boucharlat

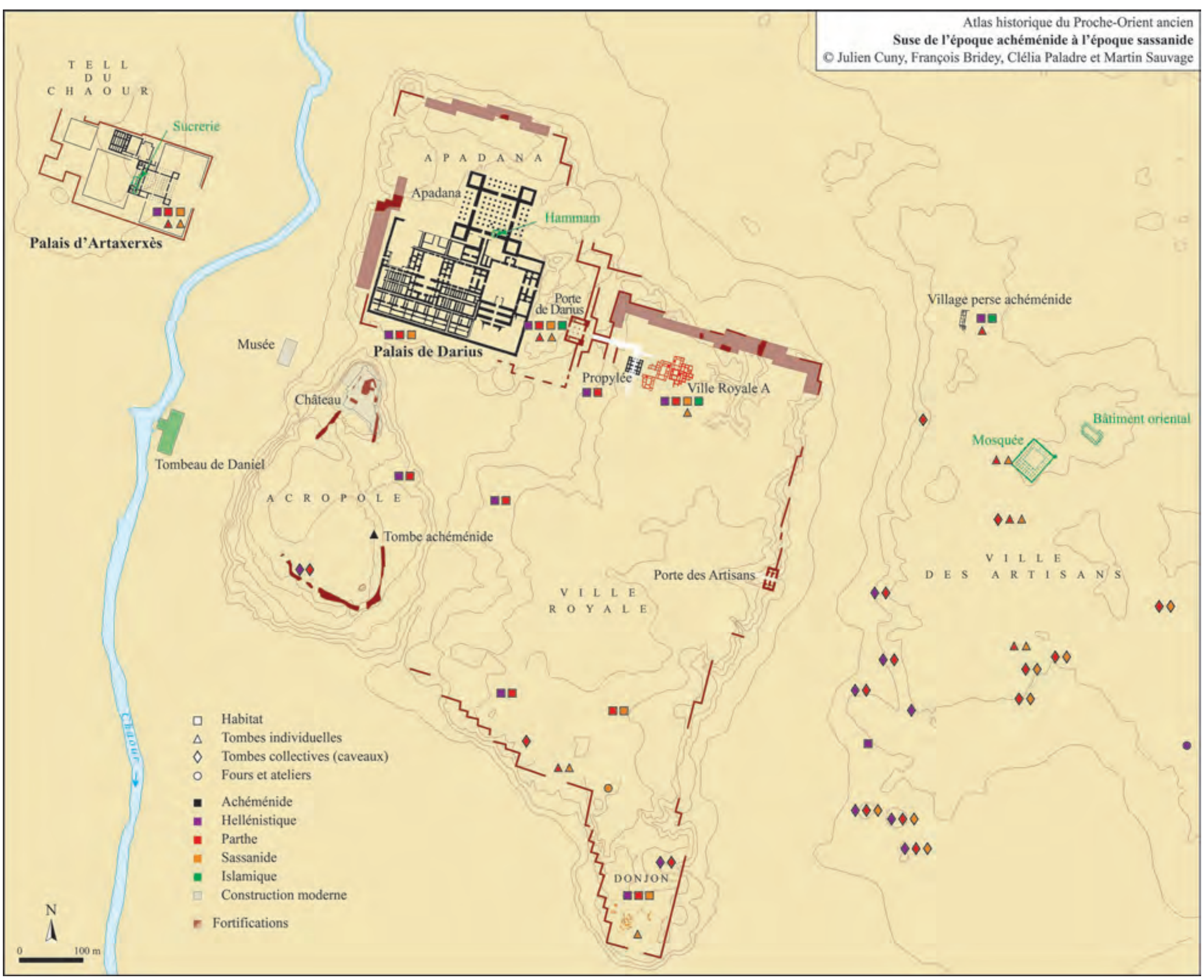


Figure 11.136 Susa in the Achaemenid period (Sauvage 2020: 133) (image courtesy of Julien Cluny, François Bridey, Clélia Paladre and Martin Sauvage).

1997, 2001, 2009a, 2013a: 517–520; Henkelman 2012: 950–955; Perrot 2013b; Khatchadourian 2016: 81–85; Potts 2016: 323–330). The most significant monument was the great palace of Darius, constructed over some 15 years as attested in texts from Persepolis and Babylon that record the dispatch of materials and labour to Susa (Briant 2013: 18–22), and excavated by the French mission in the late 19th century AD (Figure 11.137). In a fabulous example of what Liverani (2006: 41) calls the "propaganda of imports," Darius enumerates in a famous inscription the materials for the palace's construction, as well as the artisans to work them, as resourced from all corners of the empire, including stone for columns from Elam, cedar from Lebanon via Babylon, sissoo wood from Gandhara and Kerman, gold from Lydia and Bactria, silver and ebony from Egypt, lapis lazuli and carnelian from Sogdia and turquoise from Chorasmia (Figure 11.138) (Roaf 1990: 212–213; Vallat 2010; Potts 2016: 323). Construction of this immense building complex involved the excavation of >10 m-deep foundation trenches that were filled with gravel, supporting a platform covering 12 ha in area and with a retaining terrace wall rising to 14 m in height. As at Persepolis, Darius' palace at Susa sits upon a high platform and features a separate monumental gateway and a massive pillared hall or Apadana comparable in scale to that at Persepolis, 109 × 109 m in area and with columns 21 m high (Stronach 2001: 101–104). The main component of the palace is the Residence, a complex of three aligned courtyards, the largest of which was adorned with glazed brick panels depicting guards (Figure 11.139) archers, lions and griffins now on display in the Louvre Museum (Muscarella *et al.* 1992: 223–241; Henkelman 2012: 953–954; Caubet and Daucé 2013). To the south of the innermost courtyards lay an area of royal reception and apartments with rooms for royal officials, scribes and archives. At the door to the royal apartment stone slabs were buried in the foundations, bearing inscriptions in Elamite and Akkadian that detail the empire-wide engagement in providing the materials and labour for Darius' magnificent palace at Susa. Shattered fragments of inscribed stone vessels and objects of Egyptian Blue

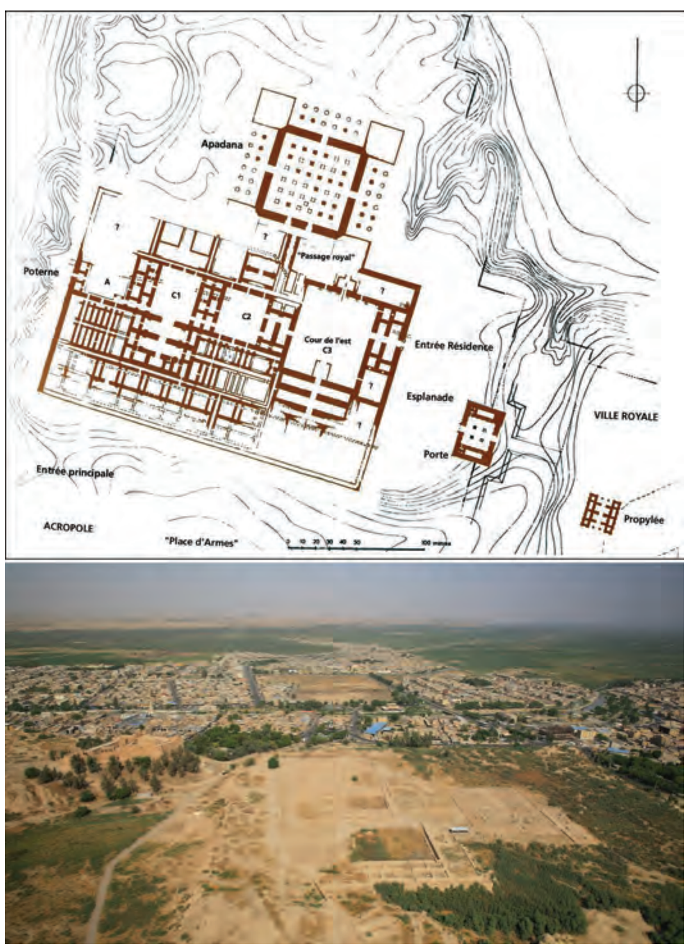


Figure 11.137 Susa, Palace of Darius (http://www.achemenet.com/en/visit/?/susa/palace-of-darius/8) and aerial image looking west (photo credit: Susa UNESCO World Heritage Base; plan courtesy of Archaeological Mission at Susa).

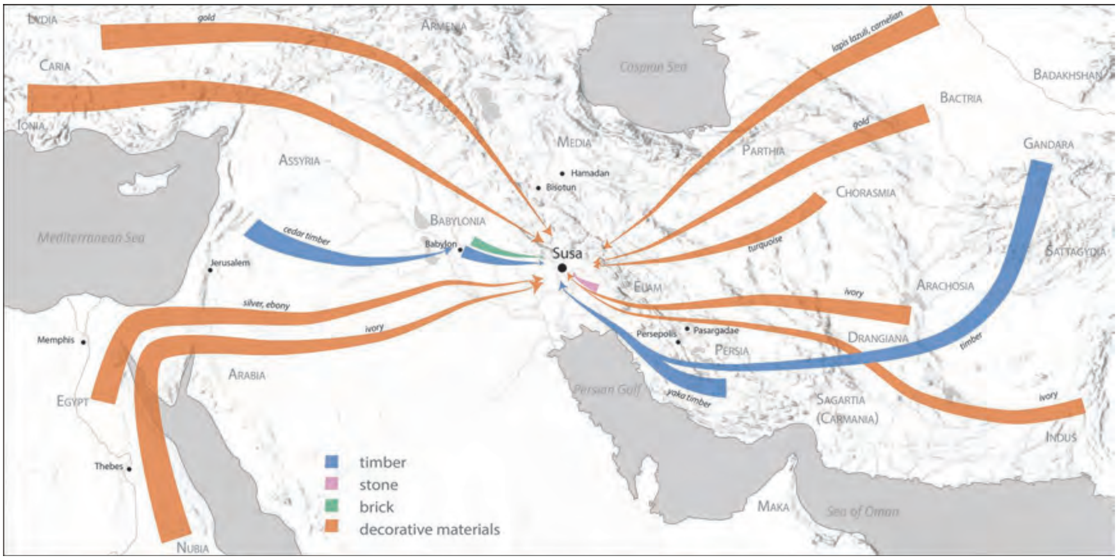


Figure 11.138 "Propaganda of imports": the building of the Palace of Darius at Susa (after Roaf 1990: 212–213).

Figure 11.139 Susa, Palace of Darius, glazed brick reliefs of archers (SB3305, SB3309, SB3310, SB3302; photo credit: © RMN-Grand Palais, Musée du Louvre / Hervé Lewandowski).

(blue frit: Amiet 1990; Moorey 1994: 186–188) found at Susa and Persepolis hint at the richness and colour of elite Achaemenid lifestyles.

Located 50 m east of the Residence, a monumental gateway provides formal access to the palace complex, comparable in scale to the Gate of All Nations at Persepolis. This structure, 40 × 28 m in plan, was begun by Darius and completed in the reign of Xerxes. The famous statue of Darius (Figure 11.140) was found within this gate complex (Yoyotte 2013: 273 map). The statue was made in Egypt and brought to Susa by Xerxes at the gate's completion. Although the upper part is missing, the Egyptian stance of the king is clear. An inscription in four languages (Akkadian, Elamite, Old Persian, Egyptian hieroglyphic) states that "Here is the stone statue of the king Darius who ordered it to be made in Egypt." Around the base are 24

Figure 11.140 Statue of Darius, found at Susa (photo credit: Nima Fakoorzadeh, Baloot Noghrei Inst., courtesy of the National Museum of Iran).

cartouches in the form of fortresses representing subject peoples of the king from across the empire (Figure 11.141) (Roaf 1974; Yoyotte 2013).

Across a deep ditch a mudbrick bridge connected the Susa palace complex with the so-called "Ville Royale" to the east, where within an area of some 100 ha a large building with columned porticos was built by Xerxes (Ladiray 2013). Access from the east to this part of the Royal City was via a monumental gateway constructed upon an imposing 18 m-high defensive bank, but our understanding of the nature of occupation and activity within the Ville Royale remains obscure (Henkelman 2012: 953; Boucharlat 2013a: 520). The lack of official Achaemenid archives from Susa, unlike Persepolis, hinders interpretation of the function and significance of the site within the framework of imperial administration and extension of power, but hints from the few recovered tablets and bullae reveal the workings of an imperial bureaucracy controlling rural production, storage and distribution on a scale similar to that attested at Persepolis (Henkelman 2012: 954).

Following Darius' death in 496 BC, further building work at Susa was conducted by his successors including Xerxes. Artaxerxes II repaired the Apadana of Darius and constructed a new palace outside the walls of Susa across the Shaur river composed of a series of buildings, including a columned hall with porticos, situated around a garden (Boucharlat 2013b; Potts 2016: 330–331). Major Achaemenid finds at Susa include an intact 4th century BC "bath-tub" coffin tomb on the south side of the Acropole (Figure 11.142) (Muscarella *et al.* 1992: 242–252; Henkelman 2012: 953; Frank 2013; Wicks *et al.* 2018), containing a decorated silver bowl, alabaster vessels and gold bracelets, necklaces and earrings. These grave goods, along with a jewellery hoard from Pasargadae, the Oxus Treasure and the Lydian Treasure from looted tombs in western Turkey, considered with depictions in Achaemenid art, together provide rich illustration of personal adornment amongst the Persian elite (Curtis 2005b). The Susa tomb represents a rare example of Achaemenid human burial as extremely few Achaemenid cemeteries have been excavated in Iran (Henkelman 2012: 956). Achaemenid and later rock-cut tombs, often difficult to date because of the lack of surviving contents, may have been inspired by the royal tombs at Naqsh-e Rustam and Persepolis.

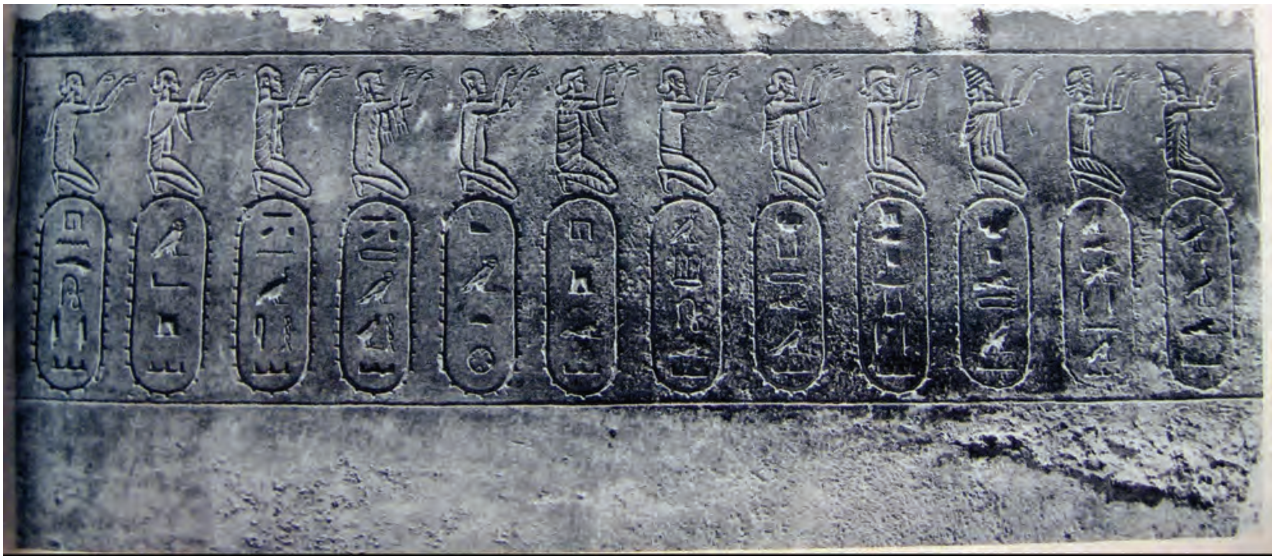


Figure 11.141 Statue of Darius, base of the statue (photo courtesy of Archaeological Mission at Susa).

Figure 11.142 Susa, depiction in watercolour of Achaemenid tomb (Muscarella et al. 1992: Figure 54) (image from http://www.achemenet.com/visit/suse/map/1.6.2P_Tombe_Acropole.jpg).

Beyond the major imperial centres of Pasargadae, Persepolis and Susa, traces of Achaemenid activity within the imperial heartland include so-called "pavilions" or way stations such as **Qaleh Kali** in the Mamasani region of western Fars, 150 km west of Persepolis, part of a regional complex of impressive Achaemenid buildings with massive columns and porticos on the royal highway between Persepolis and Susa (Potts *et al.* 2007, 2009a; Henkelman 2012: 957–959). Excavations in Mamasani have also revealed Achaemenid levels at **Tol-e Spid** and **Tol-e Nurabad** (Potts and Roustaei 2006). Survey in the Mamasani region indicates a major increase in Achaemenid settlement of the region following a Neo-Elamite settlement hiatus in the early first millennium BC (Askari Chaverdi *et al.* 2010). Evidence for temples, non-royal tombs, and indeed for non-royal activity more broadly across the Iranian heartland of the empire is singularly lacking (Boucharlat 2013a: 523), not least because of a strong emphasis on imperial centres within the archaeology of Achaemenid Iran so far. Multi-period archaeological surveys have contributed modestly to our understanding of the Achaemenid impact on regional settlement patterns, partly because of challenges in distinguishing recoverable Achaemenid ceramics from site surfaces (Adjerloo 2010).

As regards eastern Iran and adjacent regions (Vogelsang 1992; Genito 2013), archaeological evidence for an Achaemenid presence is sparse but levels of appropriate date have been excavated at **Tureng Tepe** on the Gorgan plain (Deshayes 1973; Boucharlat and Lecomte 1987) and at a range of sites across the border in Turkmenistan. Excavations at **Tappe Rivi** on the Samalghan plain in North Khorasan province have uncovered remains of

Figure 11.143 Tappe Rivi, North Khorasan. Top: aerial view of grid F16, with excavated wall lines of Achaemenid Building A. Bottom left: close-up of the central part of Building A with column base in situ. Bottom right: remaining walls of the monumental Building D, founded in 8th century BC (images courtesy of Tappe Rivi Project, ICHHTO Bojnurd & DAI Tehran).

a substantial mudbrick building with a central columned hall as well as a complex of impressive buildings and walls that appear to resemble Median fortified complexes at Godin Tepe and Nush-i Jan (Figure 11.143) (Jafari and Thomalsky 2018). Close to Birjand, the site of **Takhcharabad** has architecture and ceramics of Achaemenid date (Dana 2019). To the south, in the Achaemenid province of Drangiana, including modern Sistan and Baluchistan, the key site is **Dahan-e Gholaman**, a provincial capital where a temple was excavated, amongst some 30 buildings, with evidence for ritual use of fire and animal sacrifice, and typical Achaemenid ceramics (Boucharlat 2005: 268–269; Genito 2010, 2014; Gnoli 2011; Mohammadkhani 2012; Zehbari *et al.* 2015). Regional surveys in Sistan have identified scores of sites with plausible evidence for Achaemenid occupation, including specialised ceramic production sites (Maresca 2018).

Achaemenid occupation at **Tepe Yahya**, period IIa dated to *c.* 500–375 BC, suggests village-scale activity (Lamberg-Karlovsky 1972; Magee 2004). In the Halil Rud-Jiroft region of Kerman province, excavations at **Qaleh Kutchek** have uncovered an important settlement spanning *c.* 600–200 BC with an associated cemetery of Achaemenid date (Azadi *et al.* 2012), while surveys of the western Jazmurian basin and the southern Jiroft region reveal a significant density of Achaemenid rural occupation (Pfälzner and Soleimani 2015; Sheikhakbari *et al.* 2015; Pfälzner *et al.* 2019; Maresca 2018), all indicative of a favourable climate and environment for rural settlement and perhaps stimulated by central imperial interests.

Beyond eastern Iran and into Central Asia it is even more challenging to identify Achaemenid impact on settlement or material remains. Inscribed objects include a few scraps of tablets, Aramaic letters and ostraca from Bactria (Genito 2013: 627), while excavated Iron Age sites within the regions of Margiana and Bactriana indicate some degree of Achaemenid impact on ceramics and other forms of material culture. Most intriguing and spectacular is the **Oxus Treasure** (Dalton 1964; Curtis 2004, 2005b, 2013b: 114–127), which includes

Figure 11.144 Oxus Treasure, gold model chariot drawn by four horses (© The Trustees of the British Museum).

many items of clear Median and Achaemenid influence and can be dated to the 5th–4th centuries BC. Special items within this rich assemblage of some 180 pieces of gold and silver, found in the 1870s along with a large mass of coins probably at the Bactrian site of Takht-i Kuwad on the north bank of the River Oxus in Tajikistan, include a gold model chariot pulled by four horses and manned by two figures wearing Median trouser-suits (Figure 11.144), 51 votive plaques of thin sheet gold chased with designs of human figures mainly also in Median dress, a gold scabbard cover with embossed and chased scenes of royal lion-hunting (Boardman 2006), and a host of sumptuous gold and silver vessels and items of adornment. The likeliest interpretation of the hoard is that it represents a collection of material accumulated over time, up to 200 years, as dedications to a temple, possibly with Zoroastrian connections (Curtis 2013b: 127), in these eastern marches of the Achaemenid empire.

Achaemenid Persian impacts on regions outside Iran are variable, often hard to discern and have too rarely been the specific focus of survey or excavation strategies (regional summaries in Tsetskhladze 2003; Briant and Boucharlat 2005; Curtis 2005c: 39–49; Magee *et al.* 2005; Knauss 2006; Magee and Petrie 2010; Potts 2010c; Grave *et al.* 2016; Khatchadourian 2016, 2018). Official Persian policy in employing pre-existing regional institutions as sustainable agents of imperial control means that the materiality of dominance may persist through dramatically changing political circumstances. Such continuities are attested in the many large-scale structures, designated as "palaces," "official residences" or "administrative centres," found across the geographic span of the empire, many of which have significant pre-Achaemenid phases. But such structures are often reshaped with some degree of "reappropriation and rebranding," for example by the addition of Achaemenid columned halls as commonly found in the Caucasus region and as distantly as Chorasmia south of the Aral Sea (Khatchadourian 2012; Minardi *et al.* 2017; Abdi and Dadafar 2019). As to Georgia in the Achaemenid period, a full-scale adoption of "almost the whole panoply of genuine Achaemenid art" betokens "a paradigmatic process of acculturation, not only of the local elite, but of the common people, too" (Knauss 2006: 103, 105). Evidence for imperial conquest, siege and other forms of military activity are found at sites such as Gordion (Voigt and Young 1999) and Sardis (Cahill and Kroll 2005) in Anatolia, at Palaipaphos in Cyprus (Maier 1996) and arguably at several sites in Palestine (Tal 2005; Khatchadourian 2012: 967). Throughout the empire an integrated military system of fortresses and garrisons underpinned Persian desire to control trade and communication routes and to protect sensitive border zones (Anderson 2010).

The scant available evidence on non-elite domestic life across the empire suggests considerable continuity in lifeways from pre-Achaemenid times, including with regard to food production and consumption (Lhuillier and Mashkour 2017), but with some evidence for enhancement of regional elites through networks of exchange and mobility enabled by Achaemenid transregional hegemony (Grave *et al.* 2016). Modes of human burial include elite imitations of core imperial fashions, such as the Pyramid Tomb at Sardis and others inspired by the Tomb of Cyrus at Pasargadae (Ratté 1992; Dusinberre 2003). As with other aspects of life under Achaemenid rule, treatment of the dead and the exercise of cultic practices are manifest in a range of religious structures, comprising a complex mix of pre-Persian traditions with new practices attesting a degree of Achaemenid influence (Khatchadourian 2012: 974–981), including the evidence of so-called "fire temples" at sites such as Tsikhiagora in eastern Georgia (K'imšiašvili and Narimanišvili 1995–96).

In summary, our understanding of the archaeology of the Persian Achaemenid empire, even in its Iranian heartlands, is still a work in progress. While we possess a wealth of evidence for imperial and elite residences and associated structures, often with limited understanding of how such buildings were lived in and used (Curtis and Razmjou 2005: 54–55; Razmjou 2010), we have restricted knowledge and appreciation of non-elite modes of living even in core regions of the empire. Excavation of Achaemenid-period domestic houses has been extremely rare and usually incidental to excavators' research agendas. But the potential for targeted, contextual and integrated archaeological and textual approaches to non-elite houses and neighbourhoods is immense, as demonstrated in the very rare studies of this nature. Thus, Heather Baker's (2010) innovative study of Neo-Babylonian and Achaemenid houses at Nippur and Isin in Babylonia generates archaeologically testable hypotheses, including a suggested correlation with high social status of the extent and degree of house alteration, in the form of adjusting room alignments and sizes for example by building or demolishing internal walls.

It is increasingly clear that major components of the Achaemenid dominance of Iran and beyond grew out of pre-existing structures of power and display, as most convincingly illustrated by Persian palace architecture and decoration. Thus, the columned halls or *apadanas* that characterise elite residences across much of the Achaemenid empire can be traced back to Iron Age II (early first millennium BC) examples at Hasanlu (see above), and Iron Age III columned halls at Ziwiye in Iranian Kurdistan and Median examples at Baba Jan, Godin Tepe and Nush-i Jan (Curtis and Razmjou 2005: 50; Huff 2005; Gopnik 2010; Roaf 2010; Potts 2016: 329), drawing also on pre-existing Elamite architectural traditions as attested above all at Susa (Álvarez-Mon 2018a). The genius of the Achaemenid imperial project lay in intertwining the long-established cultural practices and traditions of Elam, Fars and Iran with those of other regions of Southwest Asia, near and far, into a unique tapestry of styles and ways of living and doing that persisted for more than 200 years, thereby constituting "one of the most interesting cases of ethno-genesis and acculturation in Iranian history" (Potts 2016: 346). The legacy of the Achaemenid empire has been well summarised by Meadows (2005: 188): "by virtue of the basic insight that people are most productive if left to their own habits, beliefs, customs and politics, the empire survived and flourished."

Iran in the Iron Age: climate and society

We conclude this lengthy chapter with brief comments on the main issues and themes generated through the course of our study of Iran in the Iron Age. As explored throughout the chapter, our evidential base for the Iron Age of Iran expands to include archaeological, textual and palaeo-environmental sources, which in some cases we can combine to provide more integrated interpretations of the developing nature of Iranian societies through the Iron Age.

There can be little doubting the close-knit relationship between changes in climate and environment, above all varying levels of temperature and annual precipitation, and changes in human settlement patterns across almost all Iran, at least. While human societies of the Iron Age doubtless made their own impacts upon the environment, especially during the episodes of rural intensification accompanying pulses of imperial expansion, such impacts need to be evaluated within this broader palaeo-environmental context. The severe cold and dry period that marked the Late Bronze Age-Early Iron Age transition, *c.* 1200–900 BC, clearly had a major negative impact on the agricultural and herding regimes upon which Iranian societies had come to depend. We can view this impact through analysis of settlement patterns showing a more or less complete absence of *detectable* archaeological evidence for this period in most regions of Iran, including the plains of northern and central Iran, Luristan, Khuzestan, Fars, all of south-eastern Iran and much, if not all, of north-eastern Iran.

The only significant exceptions to this picture, where we have some evidence for continuity in human settlement through the Late Bronze Age-Early Iron Age transition, are in what might be described as the "lusher" regions of Iran where a decline in annual precipitation levels might have been more readily accommodated by existing communities by adjustments to agricultural and herding practices. One such region is north-western Iran, where some 60 sites of the Early Iron Age have been detected in survey of the southern Urmia basin (Kroll 2005b), and we have seen above the evidence for continuity of occupation at Hasanlu and related sites of this area. Occupation at sites such as Ghal-e Ben in Babol, Ghel-e Kesh in Amol and Gohar Teppe in eastern Mazandaran and others along the southern Caspian region (Piller and Mahfroozi 2009; Piller 2012c) appears to persist through the Late Bronze Age to *c.* 1500–1400 BC if not beyond, but most sites of the Iron Age in this region take the form of cemeteries in forested upper regions, such as Shahne Poshte, which may indicate a shift in emphasis from agriculture to more mobile animal husbandry at this time.

More challenging to apprehend in this context is the evidence from survey and excavation in Khorasan Razavi and North Khorasan provinces in eastern Iran for significant occupation in both the Late Bronze Age and the Early Iron Age. It is not yet clear, however, whether this region is occupied through the transition or with a hiatus – at least there is clear evidence of a significant change in the nature of settlement in the Early Iron Age, with the introduction of the new ceramic technologies of Yaz I type indicating ingression of peoples, probably, from the east, as at Jayran Tepe (Vahdati 2016). If so, these people were likely moving from areas of south-eastern Turkmenistan due to climate impacts in that region as well.

By contrast, the return to wetter, warmer climate attested from *c.* 900 BC provided the environmental context for a spread of settlement and intensified societal activity across Iran, partially interrupted by an episode of drought at *c.* 725–600 BC. From 600 BC the conditions were suitable for major expansion of settlement underpinned by agricultural and herding intensification across the plains of Iran and culminating in the rise of imperial powers, as fully considered above.

Finally, it is important to stress that, as with other periods of Iran's past, we still have so much to learn about the highly diverse Iron Age societies of Iran. Even after long-term programmes of research at key sites such as Hasanlu, Godin Tepe or Persepolis, to select three more or less at random, our understanding of fundamental economic, socio-cultural and socio-political issues is generally very partial and basic. We know extremely little regarding sites in their landscapes, the social structures of urban life, the nature of interactions between major centres and their hinterlands, the dynamics of urban-rural food production and consumption, the mechanics of trade and many other areas that a truly anthropological and scientific archaeology calls for. At the broader chronological scale, these are some of the issues we return to now in our concluding chapter.

12 Themes and issues in the archaeology of early Iran

A few pockets of exploration

In this concluding chapter we return to the key issues and themes outlined in Chapter 1, taking account of the considerable ground we have covered throughout the book, as well as evaluating concerns that have arisen from our study. Our first point regards the nature of the archaeological evidence featuring in this book, which is itself a direct outcome of the nature of archaeological research in Iran. Readers will have become familiar with our refrains to the effect that "we lack the evidence with which to investigate this point adequately" or "further research is needed into this issue," but we cannot stress enough how partial and biased the available evidence is, upon which we develop our theories and interpretations, as characterised by Holly Pittman (2019: 268): "Iran is a huge and diverse land mass. Its ancient pre- and protohistoric past is known to us in the few pockets that have been explored by archaeologists and historians leaving the zones in between as blank but certainly not empty." There remains so much still to discover and understand regarding the archaeology of all periods of Iran's past. In our final paragraphs of this chapter we address some of the challenges and opportunities in advancing the archaeology of Iran in the future. But let us turn now to address the key themes articulated in Chapter 1, to summarise what our study may have to contribute to them.

Human–environment interactions in early Iran: trends and patterns through time

As stressed in Chapter 1, the past of Iran provides a unique deep-time case-study for investigation of human–environment interactions with a focus in particular on the resilience, adaptability and innovativeness of human societies in often challenging environments (Jones *et al.* 2019). What are the important issues to feature through our diachronic study of Iran's past, bearing mind that "given that agriculture, livestock and timber production dominated the economies of early civilizations in this region, climate change can be expected to have played a significant role in the development of human societies and in power transitions" (Sharifi *et al.* 2015: 228)? As regards the **Palaeolithic** (Chapter 4), the key issues commence up to 1 million years ago or more with the special role of Iran as a land bridge and corridor for early Out of Africa migrations of hominins, almost certainly at least *Homo erectus*, with movements taking place across the then-dry land of the Persian Gulf, and culminating in the eventual dispersal of hominin groups across Asia (Dennell 2020). Beyond rare points of light such as the detection of Lower and Middle Palaeolithic sites on Qeshm island in the Straits of Hormuz (Dashtizadeh 2010; Ghasrian 2017), our understanding of the timing and processes of migration and of hominin lifeways in the Lower Palaeolithic will remain modest until excavation of appropriate sites and further intensive surveys have been conducted across Iran.

For the Middle Palaeolithic, the widespread distribution of sites, attested by characteristic stone tool assemblages, suggests that from *c.* 200,000 BP the climate and environment of Iran was recurrently amenable to occupation by groups of hominins, almost certainly including or comprising Neanderthals. Such sites have been identified in regions not since occupied by hominins or humans, including what are now the salt flats of the central plateau and at altitudes above 2,000 m, once more underlining the importance of Iran for the migration of Middle Palaeolithic hominins along its natural corridors connecting Asia, the Caucasus and, ultimately, Europe (Vahdati Nasab *et al.* 2013a). Limited palaeo-environmental evidence covering the Middle Palaeolithic of Iran (Djamali *et al.* 2008) indicates major alternations of glacial-interglacial and stadial-interstadial stages, *c.* 125,000–70,000 BP, which will certainly have impacted upon the ability of hominin groups to thrive or even survive at specific episodes of this long and obscure past. Whether Neanderthal hominins evolved in Europe, as conventionally believed, or in Asia as some mtDNA evidence appears to suggest (Meyer *et al.* 2014), Iran would have again played a fundamental role in both hosting long-term residence of Neanderthal groups and in enabling

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their dispersal across the Eurasian continent. We hope for the discovery at some date in the future within Iran of significant Neanderthal or other hominin remains, such as those from across the Iraqi border at Shanidar Cave, which might greatly augment our knowledge and understanding of these distant times and processes.

With the onset of the Upper Palaeolithic from *c.* 45,000 BP, the scope and detail of palaeo-environmental evidence from Iran significantly increases, enabling us more fully to investigate human–environment interactions. The Lake Zeribar core evidence, in particular, demonstrates the inimical impact on human/hominin occupation of the Late Glacial Maximum, 38,000–15,000 BP, with severely cold and dry conditions inhibiting tree and vegetation growth, underpinning major gaps in evidence for hominin occupation in Iran as elsewhere. To the south of Iran, what is now the Persian Gulf was then a massive fresh-water lake that in the final millennia of the Palaeolithic may have attracted significant animal and human presence. In the Epipalaeolithic, the Bølling-Allerød interstadial, *c.* 15,000–13,000 BP, provided the warmer, wetter conditions within which modern human groups, and the plants and animals on which they depended, were able to thrive, while the impact of the cold and dry Younger Dryas episode, *c.* 12,900–11,700 BP, remains to be adequately explored. From this time onwards we are able to investigate the impact of humans on their environments, for example through the debate over the Broad Spectrum Revolution in the Epipalaeolithic, and the proposal that human depletion of large animal prey led to a new focus on smaller and more diverse forms of game (Stiner 1993). Central to this debate, and to all issues of human–environment interactions, is the relative extent to which we accredit human innovation and agency as opposed to external environmental pressures, broadly understood, as the dominant driving force for change (Zeder 2012). Above all, it is clear that human/hominin societies in Iran pursued their own regional trajectories of development and activity within the climatic and environmental parameters prevalent at the time, hunting their preferred prey, making stone tools in their preferred ways and from the start displaying the trends to regionalisation that have always characterised Iran, past and present.

As fully investigated in Chapter 5, there is considerable scope for analysis of human–environment interactions through Iran's **Neolithic** period, *c.* 10,000–5200 BC, supported by ever-richer lake core and other palaeo-environmental records from Iran (Figure 12.1). In sum, these records and the associated archaeological evidence show that by the later Younger Dryas in the early tenth millennium BC, human communities were present and active even in the high Zagros zone (Matthews *et al.* 2013a) while the southern Caspian shores may have hosted continuous human occupation through the Epipalaeolithic-Neolithic transition (Leroy *et al.* 2019). In other regions of Iran, the evidence for occupational continuity is much more parlous, with Neolithic farmers and herders with their plants and animals arriving in waves across the millennia from *c.* 7500 BC. An issue in need of further investigation is that of the extent to which human activity, including the herding of grazing and browsing animals, had a significant impact upon the nature and distribution of vegetation regimes through the Early Holocene, and to what extent we can regard such regimes as essentially anthropogenic in the sense explored through the innovative work of Asouti and Kabukcu (2014).

Further research is also needed into the issue of Rapid Climate Change (RCC) cooling anomalies in the Early Holocene, at 10.2, 9.2 and 8.2 ka BP, and their potential impact upon human settlement and activity (Borrell *et al.* 2015; Jones *et al.* 2019). While it is possible to group Iranian Neolithic sites in broad bands of time that appear to bear some relation to these RCC events, we are in need of a much fuller, more refined and more secure chronological framework, rooted in large quantities of reliable radiocarbon dates from all key sites, before we can address this problem with the confidence it demands (Flohr *et al.* 2016; Palmisano *et al.* 2021). One argument for future investigation is that the resilience and adaptability developed by human societies, with their crops and herds, through the highly changeable seasonal circumstances of their daily lives in Iran stood them in good stead in dealing with the larger-scale environmental challenges presented to them by such events as the RCC episodes.

The **Chalcolithic** period in Iran (Chapter 6), *c.* 5200–3200 BC, coincides with the so-called climatic optimum with elevated levels of rainfall across Iran enabling both a spread of human settlement as well as the production of agricultural surpluses that came to underpin the development of complex and state-level societies at least in certain regions. Exploitation of the arable lands of Iran accompanied the full adoption of farming across Iran, while the practice of seasonal mobility, according to pasture availability, of humans with herds of animals, goat and sheep in particular, added a new dimension to food production and storage options that was incorporated into a flexible spectrum of practices and activities to be drawn upon as and when circumstances required (Alden 2015). While the climatic optimum provided the environmental context for the development of complex societies through the Chalcolithic of Iran, a dry period starting at *c.* 3200 BC (Schmidt *et al.* 2011; Jones *et al.* 2013; Islam *et al.* 2016; Guerriero and Benati 2021) may have been influential in situating, if not directly stimulating, a major transregional realignment of those societies in the late fourth and early third millennia BC.

These disruptions and realignments of the **Early Bronze Age**, 3200–2100 BC, include the collapse of the Late Uruk/Late Susa II cultural sphere and its succession in Iran, probably after a short hiatus, by the Proto-Elamite

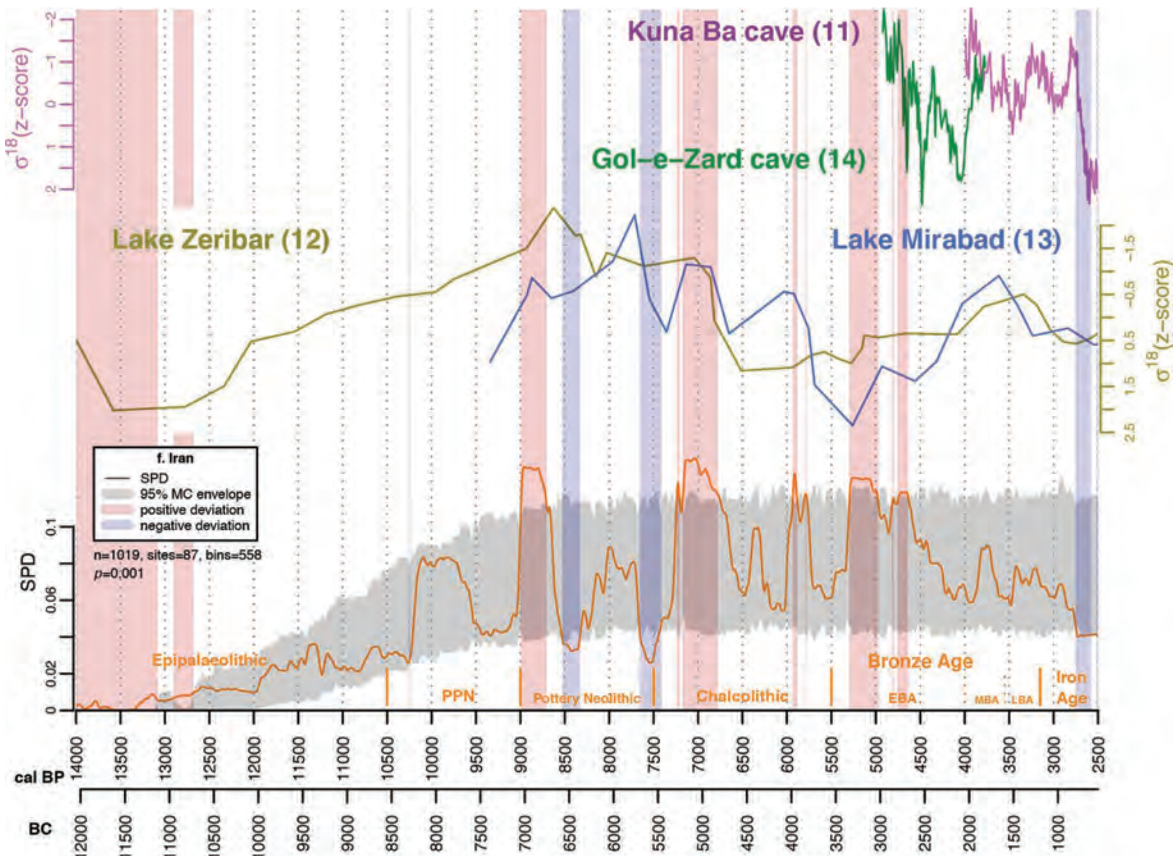

Figure 12.1 Summed Probability Distributions (SPD) of calibrated radiocarbon dates for Iran against a null logistic model (95% confidence grey envelope) compared with palaeoclimate records from Iran and beyond (Palmisano *et al.* 2021: Figure 12) (image courtesy of Alessio Palmisano).

"state" (Chapter 7) with its widespread evidence for the local management of agricultural economies as attested in the textual evidence from a range of sites, principal among which are Susa, Sofalin, Malyan and Tepe Yahya. This explicit concern with micro-management of the food-producing economy across multiple regions of Iran suggests an acute awareness by ruling elite groups of the fragility of agricultural production in the seasonally and episodically variable climate of Iran, as well as a concern to control the activity and productivity of subject people. The fragility of the rural economy at this time appears to be highlighted by the evidence from regional surveys, with settlement concentrated in larger focal centres and much of the countryside across Iran showing a collapse of rural settlement from previously healthy Late Chalcolithic levels (Helwing in press-c). The Proto-Elamite settlement pattern of rural abandonment, and agglomeration in central places such as Susa, Malyan, Yahya and Sofalin, coupled with an enhanced concern to micro-manage the subsistence economy through bureaucratic means, may all constitute adaptive responses to adverse climatic and environmental conditions at the turn of the fourth-third millennia BC. Following the breakdown of the Proto-Elamite world at *c.* 2900–2800 BC, a major episode of settlement collapse is indicated by survey evidence from many areas of Iran, including the Qazvin, Tehran, Qom and Kashan plains, and the plains of Khuzestan and of Fars, at least, spanning several centuries and in some areas much longer, all of which must be connected to the ongoing climatic adversity of the period *c.* 3200–2700 BC, centuries that appear to have been exceptionally cold and dry (Djamali *et al.* 2009b; Islam *et al.* 2016).

In Chapter 8 we examined the Early Transcaucasian Culture (ETC) of north-western and western Iran as one element of the major episode of societal disruption and reformation that characterises Iran in the first half of the third millennium BC. The ETC focus on specific environmental attributes for the areas into which they chose to migrate and settle suggests a clear societal vision for agricultural and pastoral activities, probably including viticulture and village-based seasonal herding mobility, that drove ETC expansion across major swathes of the upland zones. Limited palaeoclimate evidence from the Caucasus (Connor and Sagona 2007) indicates high levels of precipitation in this region through the fourth and third millennia BC that may have lain behind the initial movements of ETC peoples to the south and southwest. At the same time ETC communities developed their distinctive economic focus on mixed herding and farming on light upland soils, ideally suited to pristine exploitation of the large swathes of territory into which they migrated. If this narrative is valid, then we have an instance of climatic adversity in the form of excessive precipitation, obliging human societies to devise new agricultural regimes, with their attendant social attributes, which then enabled and underpinned the dramatic dispersal of those new regimes far and wide from their original source. The collapse of the ETC world in Iran by 2400 BC at the latest appears to occur too early to be connected to the famous 4.2 ka event of *c.* 2200 BC, regarded by many as a globally impactful phenomenon (Staubwasser and Weiss 2006).

Elsewhere in Iran, beyond the ETC world, there is significant evidence for regional retrenchment in the later fourth millennium BC, exemplified in the low-key nature of transregional engagement of the emergent complex societies of south-eastern and north-eastern Iran with their neighbours to the west in Mesopotamia and to the east in Central and South Asia (Chapter 9). With the amelioration of climate from the earlier third millennium BC, the pace and intensity of internal socio-political development and external connectivity rapidly increase, as attested in the movements of raw materials, finished goods, people, animals and crops across vast swathes of Asia in the middle of the third millennium BC. We can view these centuries as a second pulse of the climatic optimum with warmer, wetter climes enabling enhanced and more diverse crop yields that underpinned the scale and complexity of the human societies feeding thereon. The highly sophisticated, transregionally engaged societies of Early Bronze Age south-eastern Iran, in the Halil Rud, the fringes of the Dasht-e Lut, the Helmand delta, the Jazmurian basin and the Bampur valley, as well as those of north-eastern Iran, were all founded on the strength of this agricultural and pastoral bounty. When the climate once more reverted to hotter, drier conditions towards the later third millennium BC, all these sites and regions were abandoned by permanent settlement for up to 1,200 years, with sporadic mobile pastoralist evidence alone attesting human activity through this time (Gurjazkaite *et al.* 2018; Vaezi *et al.* 2019). The collapse of these elaborate societies, and of others in surrounding lands, appears to be directly attributable to a major reduction in summer rainfall patterns and a southwards drift of the Indian Ocean Summer Monsoon system, once more illustrating both the ecological fragility of complex societies in Iran and their ingenuity and opportunism in taking maximum advantage of favourable conditions when they allowed it.

The settlement patterns of Iran in the **Middle-Late Bronze Age**, *c.* 2100–1250 BC, are decidedly patchy. Significant evidence for continuity of occupation through these centuries comes from north-western Iran while in Luristan, the central Zagros region, the plains of Fars and all south-eastern Iran the evidence suggests reduced intensities of human activity culminating in a major episode of abandonment at the end of the Late Bronze Age. In low-lying Khuzestan, consistent levels of societal development through the early third millennium BC culminated in the increasingly dominant role of intrusive Mesopotamian polities from the west, manifest in the textual and archaeological evidence from Susa above all (Chapter 10). At the collapse of the Akkadian empire at *c.* 2100 BC, associated with a major episode of drought and dust dispersal (Sharifi *et al.* 2015; Carolin *et al.* 2019) and with a global climatic downturn (Staubwasser and Weiss 2006), the resilience of society at Susa is personified in the remarkable character of king Puzur-Inshushinak, and across Khuzestan by expansion of settlement on the plains of Susiana. Alone amongst the regions of Iran, the fertile and well-watered alluvial plains of Khuzestan supported dense settlement and socio-culturally sophisticated societies through the centuries of the second millennium BC until a period of darkness descends at *c.* 1100 BC and lasts for up to 300 years, only one component of a major episode of disruption impacting the entire eastern Mediterranean and well beyond.

This major episode of transregional disruption persists through the first phase of the **Iron Age**, *c.* 1250–330 BC, and is clearly connected to the increased aridity and cold attested in multiple palaeoclimate records of Iran and Southwest Asia (Chapter 11). From 900 BC, a recovery in temperature and rainfall levels (Fallah *et al.* 2017) facilitated a resurgence of settlement and agricultural productivity that in turn enabled the rise of the great states and empires of the mid-later Iron Age. At the same time, the impacts of imperial programmes of expansion and rural intensification of agriculture, and of large-scale managed landscapes, have left clear signals in the palaeo-environmental records of lake and peat cores across Iran, vividly illustrating the dialectic nature of human–environment interactions through the deep time of Iran's past. These issues are explored further in the concluding section to Chapter 11.

In sum, from our diachronic study of human–environment interactions through Iran's past we can stress the following points. Firstly, the agricultural basis of all Holocene societies of Iran was essentially fragile in the sense that even minor fluctuations in rainfall and temperature could doom a farming regime to failure or to radical transformation. This feature was especially the case in certain regions of Iran, such as the southeast, where the climatic parameters for productive agriculture were relatively restricted, and less so the case for the lusher, greener regions of Iran in the north and northwest. Secondly, the long-term resilience of Iranian societies as attested recurrently

Plant or animal-related developments, technological developments, Social developments

Event	Location	Approximate date
The dominant presence of hunter-gatherer groups of anatomically modern humans	Various sites in Iran	40,000 BP
Emmer and/or Einkorn Wheat grains were exploited and cultivated	Chogha Golan	11,800 BP
The extensive usage of mortars and grinding stones	Chogha Golan, Sheikh-e Abad	11,800 BP
Rise of agricultural and pastoral communities	Various sites in Zagros mountains	12,000-10,000 BP
Domestication of Barley	Chogha Golan	10,600 BP
Invention of clay token, one of the earliest accounting tools	Tepe Asiab and Ganj Dareh	10,500 BP
Utilization of Stone vessels	Chia Sabz, Ali Kosh,	10,000 BP
Utilization of bread ovens	Tappeh Sang-e Chakhmaq	10,000-9,000 BP
Extensive use of stone sickle blades	Tappeh Sang-e Chakhmaq	9,900 BP
Development of basketry	Ali Kosh	9,850 BP
Dug-in storage cubicles in residential areas	Ali Kosh, Ganj Dareh	9,850-9,250 BP
Domestication of Emmer and/or Einkorn Wheat	Chogha Golan	9,800 BP
Early traces of animal domestication, especially sheep and goat	Ganj Dareh	9,450 BP
Domestication of two-row Barley	Iran, Sheikh-e Abad and Ganj Dareh	9,450 BP
Sun-dried clay storage containers	Ganj Dareh	9,450 BP
Stone reaping knives	Ganj Dareh	9,250 BP
Development of fire-dried pottery	Ganj Dareh	9,000 BP
Development of rotary grain mills	Tappeh Sang-e Chakhmaq	8,740 BP
Development of small irrigation systems on the basis of surficial aqueducts	Fars Province	8,250 BP
Cultivation of hexaploid bread Wheat or Spelt and six-row Barley	Hajji Firuz Tepe and Tepe Sabz	7,950 BP
Emergence of ceramic or baked-clay sickles	Fasil	6750 BP
The emergence of urban life	Tall-e Bakun, Susa	6,500 BP
The establishment of city-states	Susa	6,350 BP
Fermentation of barley	Godin Teppe	5,500 BP
Earliest signs of animal workforce in agriculture such as plowing and transportation	Susa	5,450 BP
Development of Qanat system, the underground aqueducts	Dashte Bayaz	5,200 BP
Invention of proto-Elamite inscription and clay tablets	South-West of Iran	5,050 BP
Establishment of Elamite Kingdoms	South-West of Iran	4,850 BP
Utilization of bronze sickles	Haft Tepe	4,000 BP
Utilization of iron sickles	Baba Jan Tepe	3,000 BP
Establishment of Median Empire	West of Iran	2,700 BP
Invention of watermills (Asiab)	Zagros foothills	2,300 BP
Invention of windmills (Asbad)	Probably East of Iran	1,400-1,200 BP

Figure 12.2 Major cereal-related epsiodes of Iran's past through time (Ghahremaninejad *et al.* 2021: Table 1) (image courtesy of Ehsan Hosein).

in the face of extreme challenges was rooted in high flexibility of those same farming regimes, whereby societies could select, consciously or not, from a menu of food production options according to changing circumstances (Gaastra *et al.* 2021). The complex diachronic interplays of many of these factors, hinging on cereal exploitation, are boldly summarised in Ghahremaninejad *et al.*'s (2021: Table 1) table, reproduced here (Figure 12.2).

We have repeatedly noted from the faunal, floral and palaeo-environmental evidence from excavated sites the considerable diversity and variability in food production strategies from site to site and from period to period

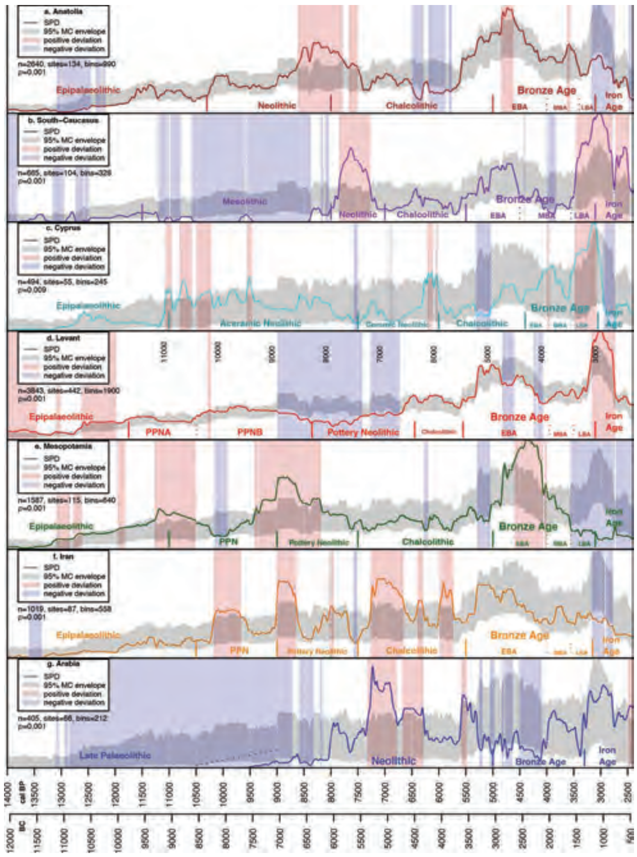

Figure 12.3 Summed Probability Distributions (SPD) of calibrated radiocarbon dates from Iran and beyond against a null logistic model (95% confidence grey envelope) (Palmisano *et al.* 2021: Figure 3) (image courtesy of Alessio Palmisano).

within sites, which enabled societies to shift the emphasis, for example, from reliance on arable crop production to pastoral mobility and back again according to social, cultural and economic preference. It is likely that these shifting emphases underpin some of the apparent ebbs and flows of settlement patterns through time in many regions of Iran, with episodes of increased pastoral mobility less visible in the archaeological record than episodes of permanent settlement based on intensive crop production. Thirdly, we believe that consideration of each of the case studies of human–environment interactions reviewed above and throughout the book foregrounds patterns of "periodic realignment and transformation" marked by "events and periods of destabilization followed by readjustments and reconstruction," which characterise the historical approach of *la courte durée* as articulated by Daniel Potts (2016: 430–432) and discussed in Chapter 1. In-depth comparative analysis, based on summed probability distributions of calibrated radiocarbon dates, of human population trends across Southwest Asia, including Iran, similarly highlights "alternating patterns of population booms and busts across the whole Holocene" in marked contrast to the more stable long-term trends of neighbouring regions including Anatolia, the south Caucasus, Cyprus, Mesopotamia, Arabia and the Levant (Palmisano *et al.* 2021: 7, Figures 3, 12) (Figure 12.3). Finally, while significant steps are underway, we stress the need for increased input both from high-resolution, multi-proxy palaeo-environmental records and from enhanced archaeological datasets and finer chronologies in order to advance this exciting and important area of research to the next level within an increasingly global discourse (Hudson *et al.* 2012).

Identities of early Iran, individual and social

A 2012 compilation of essays surveys the "identity boundaries" of Iran across the historic centuries and up to today, commencing with the statement that "The study of Iranian identity poses considerable challenges ranging from the complex legacy of the premodern past to the diversity of ethnic and religious populations, from the history of encounters with multiple imperial powers to the long shadow cast by nationalist ideologies" (Vejdani

2012: ix). While this statement refers to the study of Iran's identity across periods more recent than those covered in this book, it stands equally valid as an introductory comment for our consideration of the topic of identity in most ancient Iran. Iranian identity is indeed a highly complex issue and we cannot do more than summarise some of its major features and current research directions in this chapter. A consistent aim throughout our book has been to explore issues of individual and social identity through study of Iran's deep-time past, through account of its material culture remains and through interpretation of those remains in coherent and cogent narratives.

As stressed in Chapter 1, Iran's population today is ethnically diverse, with up to 21 distinct ethnic groups identifiable (Mehrjoo *et al.* 2019), a unique agglomeration and combination of ethnicities resultant from both autochthonous population development and Iran's recurrent role as a major highway and crossroads of migrations from the Palaeolithic period onwards. The potential provided today by developments in the recovery and analysis of DNA from both modern and ancient human populations of Iran and neighbouring regions adds a new dimension to our archaeological approaches to ancient peoples and societies. As far back as the Early Neolithic, and beyond, we can delineate genetic lineages of some of the world's first settled farmers and herders and their hunter-forager ancestors. Such research has established that the farmer-herders of Abdul Hosein and Ganj Dareh in the central Zagros carried a distinct genetic identity substantially differing from that of their contemporaries in the western and northern Fertile Crescent, and that the earliest Iranian farmers were direct descendants of local hunter-foragers with a deep genetic ancestry reaching back into the Upper and even Middle Palaeolithic (Chapter 5; Broushaki *et al.* 2016; Gallego-Llorente *et al.* 2016; Lazaridis *et al.* 2016; Reich 2018; Narasimhan *et al.* 2019). This genetic inheritance supports an interpretation of the development of settled farming and herding in highland western Iran by local peoples, herding local animals and cultivating local crops. Moreover, as discussed in Chapter 5, the dispersal of farming practices through movements of people, animals and crops can be tracked through aDNA of all these components, including goats (Daly *et al.* 2018) and barley (Lister *et al.* 2018), underlining the key role of Iranian Neolithic pioneers in the introduction of farming and herding to regions far to the east.

There is enormous potential for further DNA research on Iranian populations through time, not least because of Iran's unique role as both a major corridor of Eurasian connectivity and as host to long-term autochthonous population traditions. In addition to the origins and dispersal of early farming communities with their animals and crops discussed above and in Chapter 5, other major issues featuring, or touched upon, in human DNA studies so far include the intriguing possibility of proving once and for all the widely held assumption that the distribution of ETC material culture traits across western Iran must be associated with migrations of people from the Caucasus into north-western Iran (Chapter 8; Mehrjoo *et al.* 2019). The vexed issue of the origins of Indo-European speaking peoples in Iran, closely tied to a sense of Iranian identity, is also slowly opening its secrets to large-scale comparative aDNA studies of populations in Iran and adjacent regions (Chapter 10; Narasimhan *et al.* 2019), while analysis of human aDNA from Bronze Age sites in eastern Iran such as Shahr-i Sokhta and the BMAC sites of Turkmenistan is adding a genetic complement to the picture of transregional connectivity and intercourse vividly illustrated by the archaeological evidence as discussed in Chapter 9. We can expect many significant new developments and discoveries as the field of aDNA research intensifies, with Iran's role increasingly to the fore.

Identity is of course about so much more than genetics and indeed is often not about genetics at all. The identity of Iran and its peoples, past and present, is a topic that consistently attracts attention, with the 1971 celebration at the Tomb of Cyrus of 2,500 years of Iranian monarchy frequently employed as a launchpad for such discussion (Ringer 2012). But what can we legitimately say about Iranian identity prior to that 2,500-year timespan, beyond the genetics? Let us adhere to the material evidence in addressing that question, as we have tried to do throughout the book. Recurrent material characteristics we can point to as special, if not unique, to ancient Iran include the following, in no significant order: (1) exuberant decorative tastes in painted and modelled ceramics with a strong emphasis on the (wild) animal and plant worlds, with lion, wild goat, wild sheep, scorpions and snakes to the fore; (2) frequent depiction in a range of media of animals adopting human poses, thus an incorporation of the animal into the human worlds or rather a merging of them both; (3) highly advanced and innovative skills in a range of crafts and technologies, including architecture, ceramics and metallurgy (to cite Roger Moorey (1967: 83) whose eye for Iranian art was especially sensitive: "In a country like Iran, where the output of the ancient metalsmiths never ceases to surprise by its vigour and variety, …"), and the curation of so many of those skills across the generations and into the recently recorded past (Wulff 1966); (4) an intermittent and intriguing relationship with the written word as an instrument of administration, as explored more fully below, and much more broadly; (5) an astonishing and adept ability to adopt, adapt, acquire, accept, alter and advance attributes of assemblages of material culture from neighbouring societies through all time periods.

Issues of gender and age are considered throughout this book, where we are able to do so, but as outlined in Chapter 1 we accept the need for a reformulation of archaeological agendas to foreground gender and age as key concerns, as cogently argued in the work of Aurelie Daems (2001, 2008, 2018; Bolger 2008), and here is an area where aDNA can make more of a contribution with its assured attribution of sex to skeletal remains. Daems' insightful analysis of Iranian iconography through time identifies women in a range of roles including as worshippers, participants in high-status elite activities such as banqueting and court receptions, and in the conduct of everyday activities such as breast-feeding babies, milking animals, pottery making, spinning, weaving, serving food and drink, playing music and dancing. Explicitly erotic scenes tend to be restricted to the Old and Middle Elamite periods as attested in terracotta plaques from the *Grand Bâtiment Central* at Susa (Chapter 10), which probably represent sex workers rather than participants in ceremonial sacred marriages (Daems 2001: 28–29).

Mina Dabbagh's (2019) investigation of the social and economic roles of women in Elam as attested in legal and economic documents from Susa, Haft Tepe and Malyan highlights the autonomous participation of women in activities such as property dealing, lending money, inheriting wealth and witnessing contracts, as well as receiving rations for work in textiles, agriculture and administration. Marta Ameri's (2020) inspirational study of seals and sealings from Shahr-i Sokhta challenges our assumptions regarding the gender of administrators, fully exploiting the material evidence from graves and residential contexts that underpins many of the types of activities articulated in Dabbagh's text-based interpretations. Overall it is probably the case that, "The largest proportion of the female population would have been engaged in mundane, religious, ritual and festive activities that confirmed or (re)negotiated their gendered roles. As well as the traditional "female" tasks of nursing and childrearing, their roles would have extended far beyond to activities such as tending animals, harvesting crops, milling grain, preparing food, spinning, weaving textiles and baskets, making jewelry, processing ceramics, and perhaps trading these goods" (Daems 2018: 763), a spectrum of activities likely to be valid for almost all periods of Iran's ancient past.

Finally, we come to the issue of unfree humans or slaves. Our direct evidence for slavery amongst early Iranian societies is restricted to attestations in proto-cuneiform and cuneiform records, principally of the late fourth and early-mid third millennia BC and mainly from early urban sites in Lower Mesopotamia (Englund 2009; Bartash 2020), but also including the Proto-Elamite texts from Susa and beyond (Chapter 7). These records indicate that slaves, male and female, young and old, could be acquired through trade, gift exchange and as prisoners of war, with the flow of humans mainly from east to west, that is from the Iranian highlands into the Mesopotamian lowlands. Treatment could be brutal, including branding and blinding. Slaves could be put to work on massive state-sponsored projects such as temple construction or could be employed in high-status households in a range of capacities. Beyond these early textual accounts, it is not possible for us to evaluate the extent and role of slavery within early Iranian societies as distinct from their Mesopotamian neighbours to the west.

Complex societies in early Iran: "fragile and evanescent"

The final general theme will focus our attention on the later phases of prehistory, proto-history and history covered in this book, commencing in the later fourth millennium BC with the development of state-level societies at least in Khuzestan and ending with the fall of the Achaemenid Persian empire 3,000 years later. What have we to learn from the study of these full three millennia of complex statehood that the lands of Iran have to offer us? In augmentation of the concluding sections to Chapters 6–11, where we have addressed thematic issues relevant to the content of each of those chapters, we conclude this chapter by considering more thematically and diachronically a set of issues related to the early complex societies of Iran.

Firstly, we reemphasise the point that Iranian societies through this period did not develop in isolation. Indeed, it is the very connectivity of Iranian societies that underpins, and stimulates them into, evermore complex modes of social and economic behaviour that in time can be characterised as state-like or at state-level, as explored in Chapter 6, and that continued to structure the kingdoms, states and empires of later times. Only with the Proto-Elamite phenomenon of the Early Bronze Age do we have an instance of a major pan-Iranian, in effect, political entity geographically confined within the territory of modern Iran. Even then, the inspiration for the Proto-Elamite "state" (we remain unsure how to categorise this phenomenon despite our exhaustive exploration in Chapter 7), at least with regard to its bureaucratic apparatus, clearly came from its immediate predecessors in the west, the state or states of the Late Uruk/Late Susa II worlds.

Secondly, we stress that there is so much research still to be done into the special nature of complex societies in Iran. All attributes of these unique socio-political constructions, testimony to the ingenuity and resilience of Iranian peoples through time, demand further investigation. As many have commented (Tosi 1987; Thornton 2012; Rashidian 2019), we stand in need of a model for early urbanisation in Iran that is designed to accommodate the evidence from Iran, rather than from elsewhere, and that encourages us to think analytically about the special nature of urban settlements in Iran, differing greatly as they do from urban settlements on the lowland plains of Lower and Upper Mesopotamia, for example. Thornton's (2012) innovative model of Bronze

Age urbanism in Iran employs an inclusive tripartite scheme, comprising primate centres, tiered settlement hierarchies and symbiotic centres. Sites qualifying as primate centres, characterised by dominant size and scant surrounding rural settlement, might include Susa in the Proto-Elamite period, Tal-e Malyan in various of its phases, and Shahr-i Sokhta through much of the third millennium BC. Tiered settlement hierarches, with multiple levels of settlement according to their areal extent and periods of occupation, include Susa and the Susiana plains in various periods, while symbiotic centres comprise sites focused on specific craft production activities situated within a symbiotic relationship of exchange with partners near and far. Suggested symbiotic centres include Tureng Tepe and Tepe Hissar, with its focus on metal and semi-precious stone craft activity through the fourth and third millennia BC.

The Early Bronze Age site at Konar Sandal in the Jiroft region is singled out by Thornton as distinct from these three urban categories, marked as it is by evidence for its role as "a major cosmopolitan center for trade and commercial activity, and perhaps also a center for ritual activity and pilgrimage," altogether a range of socio-political attributes that, "more than any other site in Bronze Age Iran, fits the traditional model for urban settlements in the ancient Near East" (Thornton 2012: 604–605). This model is a promising start but as Rashidian (2019) underlines, our knowledge of even the basic parameters of urban life in early Iran – areal extents period by period, durations and densities of occupation, internal urban layouts and structures, relations with surrounding rural and other urban sites, organisation of craft production, to name a few – is parsimonious to put it mildly. This fact is valid for the central settlements of all periods of Iran's past, across the great states and empires of the Iron Age as well as the trading, craft and administrative hubs of the Late Chalcolithic and Bronze Age.

An attribute of the early complex societies of Iran worth further attention here, and much more beyond here, is that of writing. In contrast to Mesopotamia, where cuneiform writing on clay tablets persisted as a more or less constant feature of urban society following its invention there at *c.* 3200 BC, ancient Iran's engagement with writing was more hesitant and episodic. In the words of Massimo Vidale (2018a: 277), "Writing technologies appeared on the Iranian Plateau as a rare, discontinuous variable; their evolutionary trajectory is unknown, and the two main systems presently under study (so-called Proto-Elamite and Linear Elamite) are still far from being deciphered." We have already cited in Chapter 1 Jacob Dahl's (2018: 393–394) comment that "Writing is invented more times in Iran than in any other place in the world," taken as evidence for "an extraordinary ingenuity rarely matched in other ancient civilizations." What lies behind these striking attributes of the complex societies of early Iran and their relations with the written word (Figure 12.4)?

At bottom, as we have discussed in our first theme above, the complex societies of Iran were agriculturally based. When agriculture thrived, they thrived. When agriculture collapsed, for whatever reason, they collapsed. There is no evidence for the development of complex societies or states in early Iran based solely or principally on true (i.e. non-village-based) pastoral nomadism, and therefore reliant on the availability of pasturage as opposed to arable land. Such societies are attested only from much later periods of Iran's past, such as the Mongol and Timurid, as exhaustively explored in Daniel Potts' book *Nomadism in Iran from Antiquity to the Modern Era* (2014). We have seen above how settlement and land use patterns in Iran were highly sensitive to even minor fluctuations in factors such as precipitation and temperature. This existential fragility underpins the nature of ancient Iran's relationship with writing, with writing's main role in early Iran being to micro-manage to best effect the agricultural economy, its fields, crops, animals and human labour, as demonstrated firstly by what we understand of the Proto-Elamite written corpora.

Only with the adoption of Akkadian cuneiform writing in the second half of the third millennium BC, at Susa, Malyan and Chogha Gavaneh, at least, and later still with the growth of the cosmopolitan Achaemenid Persian empire and its use of multiple scripts and languages, is writing in Iran associated, and then only occasionally, with concerns beyond the essentially agricultural. During these long centuries since the invention of writing, textual activity in neighbouring Mesopotamia, with its ecologically less fragile cities and states, had developed to cover multiple areas including legal concerns, business records, letters, royal inscriptions, treaties and literary texts (Postgate 1992: 66, Figure 3.13).

At the same time, there is a persistent, almost exclusive, elite connection of writing in early Iran. To write was to control, to make durable on clay the evidence for that control and its products, and these are elite rights and privileges that bear on the issue of social inequality (Fochesato *et al.* 2019) and its development within the context of the early complex societies of Iran. Elites were only as stable as the kingdoms, states and empires under their control: "in the earliest states, writing developed first as a technique of statecraft and was therefore as fragile and evanescent an achievement as the state itself" (Scott 2017: 148). As complex hierarchical polities came and went, writing came and went with them, and a hearty "good riddance" was doubtless the refrain of the non-elite masses, including slave labour, as they departed. With notable exceptions in Akkadian writing from Susa, the practice of writing was not embedded in non-elite strata of early Iranian society, for example amongst merchant or property-owning classes,

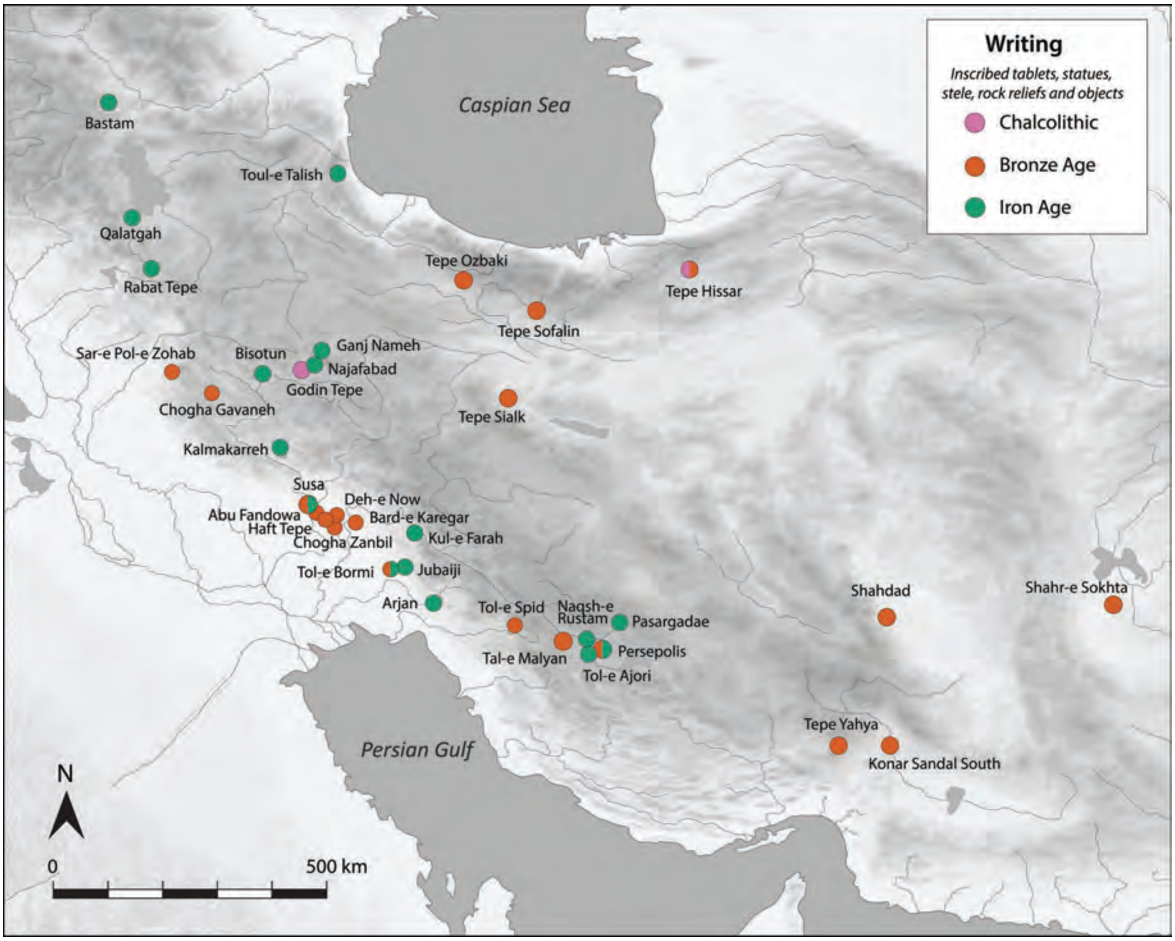

Figure 12.4 Map to show occurrences of writing in Iran through time.

in contrast to contemporary Assyria and Babylonia, and was all too easy to cast off as a superficial, undesirable characteristic of controlling elites. As phrased by James Scott (2017: 139) "the first act of many peasant rebellions has been to burn down the local records office where these documents are housed." A similar sentiment lies behind Lamberg-Karlovsky's (2001a: 221) proposal that certain societies, such as those of western Iran, adjacent to the newly literate cities and states of Lower Mesopotamia in the third millennium BC deliberately opted not to engage with writing, thereby avoiding "the cage of the state for another half-millennium."

Even within large-scale imperial contexts, such as the Achaemenid empire, writing led a fragile and flexible existence. Jeremy Black's (2008) study of the demise of cuneiform writing in Elam stresses how the cuneiform tradition in Achaemenid Iran, employed to write Elamite, Akkadian and Old Persian, appears to stutter to a halt up to 10 years *prior to* the fall of the empire, with no cuneiform texts attested during the reigns of Artaxerxes IV (338–336 BC) and Darius III (336–330 BC), a demise likely connected with the rise to dominance over the preceding 200 years of Aramaic as a spoken and written language within and beyond the peoples of the Achaemenid empire. A key issue here is the differential survival of the written evidence: while destruction by fire is generally good for clay tablets, baking them to durable hardness and therefore long-term survivability, the impact on Aramaic documents is devastating: "it is possible that thousands of fifth to fourth century BC Aramaic parchment documents went up in smoke when the Persepolis archives were destroyed by fire" (Black 2008: 59).

Alongside the ebbs and flows of the practice of writing within Iranian complex societies, the trajectory through time of seal use in Iran, often intimately associated with writing since their first co-occurrence at the very invention of writing, also demands our attention (Figure 12.5). In keeping with earlier synthetic overviews of seal use in Eurasia (Laurito 2000; Rahmstorf 2011), the Iranian evidence shows a steady geographical expansion of seal use through time, a transition from stamp to cylinder seal use, and a major pulse of sealing activity associated with the transregionally engaged craft production and trading centres of the third millennium BC.

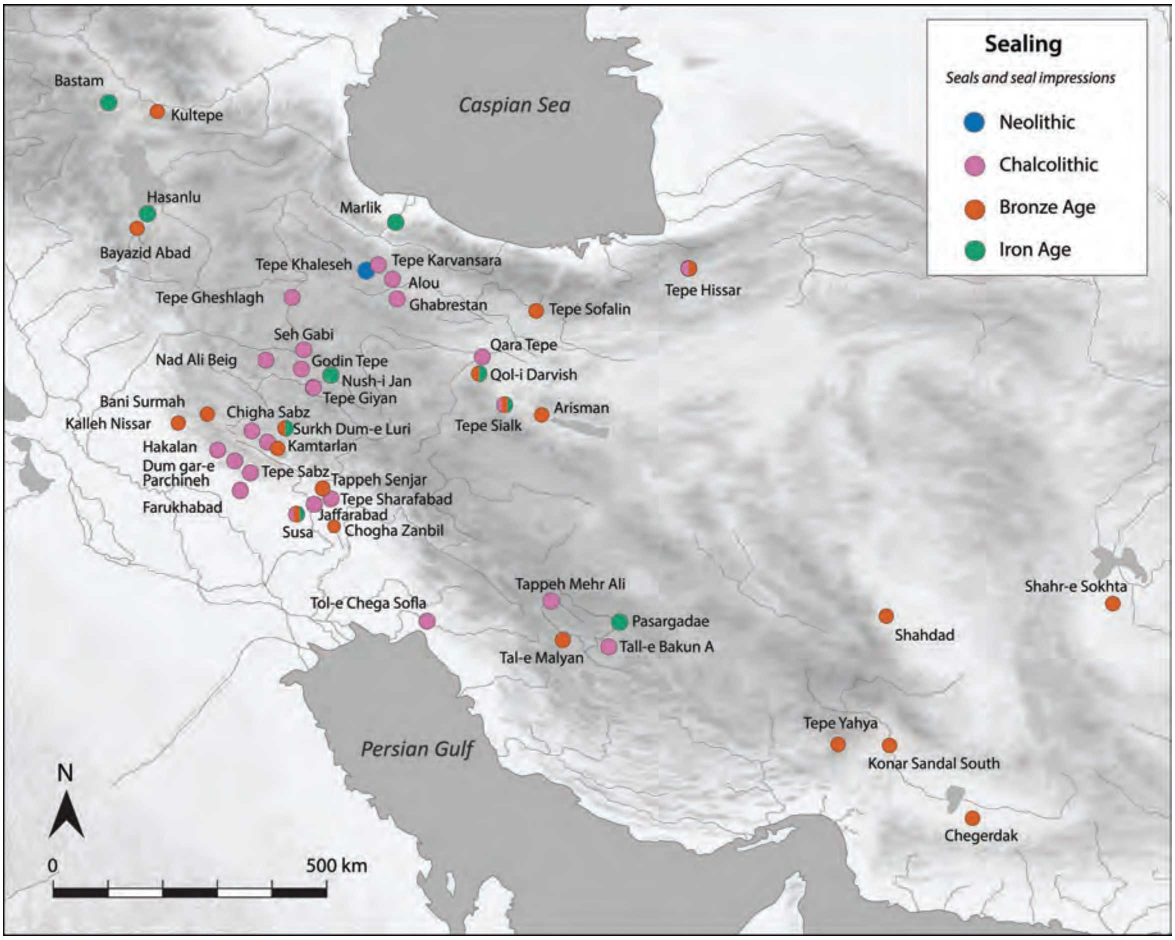

Figure 12.5 Map to show occurrences of sealing in Iran through time.

As ever, the evidential blanks are also of note. The almost total lack of evidence for use of seals by ETC communities is especially stark, contrasting vividly with contemporary societies of the Ninevite 5 cultural *koine* across Upper Mesopotamia who otherwise share many attributes with their ETC neighbours, as we explored in Chapter 8. Analogous to the conscious rejection of writing suggested by Lamberg-Karlovsky (2001a) for societies peripheral to Lower Mesopotamia through much of the third millennium BC, we suggest the possibility that the doggedly unstratified societies of the ETC world consciously and recurrently over a period of centuries chose not to engage with the world of check and counter-check betokened by the use of seals and sealings. Their apparent success in fulfilling this desire suggests an extremely effective and pervasive ideological basis to ETC society that was capable of transmission and absorption, solely through oral and visual means, across vast spans of time and space.

Where next for the archaeology of early Iran?

A key issue in studying the past of Iran in a synthetic sense is the high variability in the scope, scale and resolution of archaeological approaches to Iran's past. In the field, surveys in Iran are principally extensive in their methodology with modest use of systematic intensive survey techniques such as have been practiced for many years in countries of the Mediterranean, with some notable exceptions. The dominant extensive survey approach means that the majority of located sites tend to be the most conspicuous ones in the form of mounds or *tappehs*, plus caves, rock shelters and occasional flat sites and cemeteries (Helwing 2012: 501–502). Iran is not exempt from the global phenomenon of illicit digging and destruction of sites through urban and rural development, a modern plague that forever destroys the evidence from the lives of our forebears. Illicit digging and looting of sites can often be the sole clue to the presence of flat sites such as cemeteries, as most richly illustrated by sites of the Bronze Age and Iron Age of Luristan and elsewhere.

A further complication, inadequately researched in the context of Iran, is the differential rates of burial and erosion of archaeological sites by natural forces such as alluviation, flooding, sun, rain and wind, and the impact of these factors on the visibility and recovery of evidence from surveys (Brookes *et al.* 1982; Schmidt and Fazeli 2007), which is certain to be highly variable across Iran according to regional patterns of geology, geography, climate, environment and human activity. All these factors make it difficult to conduct valid diachronic and geospatial analyses of settlement patterns in any region of Iran. A major future project would be to collate the immense amount of published, semi-published and unpublished data from regional surveys across Iran for synthesis and analysis in the light of geo-environmental attributes specific to each surveyed region. This is a massive task that would require coordination across Iran's many institutions, public and private, with active field survey programmes.

As regards excavation, all periods of Iran's past, and all regions of Iran, will benefit immensely from further programmes of integrated scientific archaeology, applying the full range of modern scientific techniques to multiple forms of recoverable evidence. As articulated in a recent volume on Bronze Age Iran: "Iran is probably an ideal laboratory to study non-linear evolution processes, and there is no doubt that with the help of the much-needed extensive excavation and pluri-disciplinary projects to come, archaeology still has a lot to learn from this unique country" (Meyer *et al.* 2019: 354). But such an approach demands major resources that are only rarely affordable or available, not only within Iran, including laboratory facilities and equipment, scientific training and expertise in the form of PhD and post-doctoral programmes, and the time and space to interpret, analyse, synthesise and publish. It is challenging to point to more than a handful of the hundreds of archaeological excavation projects that have taken place across Iran since the 1890s, which we could badge as exemplary, state-of-the-art (for their time), scientific programmes of research, meticulously conducted, fully analysed and interpreted and fully published (which today means published in a manner so that independent academics have access to the raw data and can thereby query the excavators' own interpretations). Readers can make their own judgements on this issue through following up on the host of publication references provided in this book for almost every project. It is sobering to realise that we are still largely reliant on archaeological sequences from sites excavated 60–100 years ago – Susa, Hissar, Sialk, Hasanlu – for the basic chronologies of much of Iran's past, while in other areas even those basic chronologies do not yet exist (Helwing 2012: 503; Meyer *et al.* 2019: 352). We do not single out Iran in this regard, as we could make the same comment regarding the development of archaeological knowledge in almost any other country of the Middle East and well beyond.

Apart from the issue of forbidding expense in executing such programmes, which can only be addressed through governmental and institutional recognition of the social value of enhancing archaeological knowledge and understanding – and it remains our task to encourage and justify such recognition – there are other concerns to consider. In recent decades, as outlined in Chapter 3, there has been an enormous expansion of archaeology as a discipline within Iranian academe. In the period 1990 to 2020, the number of university departments of archaeology in Iran has blossomed at an astonishing rate of growth unlikely to have been matched by any other country of the world. Moreover, all these departments, old and new, generally have active programmes of field research, including excavations and surveys, which generate vast quantities of data. Almost all this work is reported on in abbreviated manner in interim field reports, often in Persian only, with accompanying synthetic summaries in the ever-expanding stable of journals devoted to ancient Iran and its archaeology, all of which feature throughout this book. With a few notable and noble exceptions, we lack the final integrated publications, fully supported with open access to raw data, that are essential for furthering the discipline to the next level.

In these regards and so many others, an enhanced future for the archaeology of Iran depends on a full scientific integration of the many active communities of archaeologists living and working within Iran with their colleagues around the world who share their passion for enhancing our knowledge and understanding of the globally significant socio-cultural developments hosted within the long and glorious past of Iran. From the study of Iran's past, we have everything to learn about our place on planet Earth, how we got here and how we might envision and build sustainable futures. We offer this book as a small contribution to that engagement and to that advancement.

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