Mapping Landscapes in Transformation
Multidisciplinary Methods for Historical Analysis

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PREFACE

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POSTFACE

ISBN 978 94 5867 173 1 (Paperback)
ISBN 978 94 6166 283 5 (ePDF)
https://doi.org/10.11116/9789461662835

Leuven University Press

Part one

PROJECTION

1.

Cartographic Grounds

The Temporal Cases[1]

Jill Desimini (Harvard University)

A map is inherently static and out-of-date. In the translation of information from the real world to the projected image there is a time-lapse. Even in the most real-time applications, there exists a lag. Thus, the map describes the near past — or even the far past intentionally in the case of historic maps — while often contributing to a reading, and even constructing, of a future. These relationships to time beg two questions: how is time implicit in the production of cartographic and design drawings? And what are the methods of explicitly introducing time onto the map and the plan, to contend with static representations of dynamic conditions?

In order to investigate these questions, I will focus on two specific types of drawing: the topographic map and the design plan.

Maps are too easily mistaken for objective depictions of a present-day geographical condition, and their complexity often obscures the fact that they are, in fact, distortions. Their uses, limitations, and subjectivity must be understood and respected. Distortion can stem from the underlying data, editorial choices, and representational method. This distortion relates to time and space. Maps of a particular place often rely on data collected from different sources and time periods, but represent the space as if the underlying data were uniform (Kurgan 2013). Maps utilise a set of malleable yet rigorously defined representational techniques capable of persuasion, description, and, above all, projection.

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[1] This text is an adaptation of texts that appear in Jill Desimini and Charles Waldheim, *Cartographic Grounds: Projecting the Landscape Imaginary*. New York: Princeton Architectural Press, 2016.

Often as a foundation to intervention, the map — whether it is of networked relationships or a geographically precise location — precedes the plan. The plan, both as an idea-driven spatial strategy and a projective drawing, is forced to respond to the map. This dichotomous and sequential practice has limitations. Instead, the realignment of map and plan as equally projective, precise, detailed investigations allows for a smooth, informed, and non-linear process. The base material and the project documentation are not separate entities. This is not to say that the project is geospatially or site determined but rather that the making of the map is analogous to the making of the plan.

Mapping in design culture has been enhanced and even supplanted by data-driven research, yet the map remains one of the main tools of documentation, though its proximity to the physical properties of the surface of the earth has been de-emphasised. The production of data-dependent drawings by designers has resulted in a distancing from the ground, scale, material, and temporal aspects of the métier and a loss of spatial and temporal precision at the human scale. The plan as a spatially precise drawing of a grounded, material, and topographically rich landscape has been unseated, rather than enriched, by the complexity of available information. Seen as antiquated, static, and allied with the 'master plan', the plan has been deemed incapable of addressing the dynamic relationships and spatial complexity of design in a globalised context. It could be argued, however, that a reconsideration of the plan as a typological drawing that can express the surficial, spatial, and temporal qualities of the earth is necessary to complement the complex systemic diagrams that point to the underlying social, economic, and political drivers. Grounding is necessary — and the conceptual framework and representation surrounding the spatial and temporal manifestations must match the intricacy and deliberation of the systemic thinking. This implies a greater dedication to the means of drawing as well as a return to visual perception, legibility, and the veracity of the work.

The distinction between spatial visualisation of non-geospatial data, cartographic representation driven by advanced systems of projection and symbolisation, and speculative design drawing in planar projection at the scale of the map is fundamental. Before elaborating on the advantages and limitations of the overlaps between these approaches, the terms 'the topographic map' and 'design plan' require clarification.

Topographic map

The topographic map is a class of general maps that tacitly describe a variety of physical phenomena at large scales. The scope of a topographic map once reflected the known observations of the cartographer or the scale of human perception. It is now a hybrid practice, reliant on highly accessible data, augmented and verified through the personal collection of information and ground-truthing. These maps can be distinguished from geographic maps, which used distant means to describe the entire world (Harvey 1980); from topological maps, which ignore scale and geographic location, like a subway map; and from thematic maps, which focus on a single characteristic, often geo-locating statistical information. Weather and census maps are common examples. The topographic map, like its counterparts, does not resemble the land itself, but is a flattened representation coded with information illustrated by lines, colours, textures, and conventional signs. It is a constructed depiction of a piece of the surface of the earth (or the sky or another planet), showing the distribution of physical features, with every representational element corresponding to an actual geographical position, following a fixed scale and projection. Information is compressed, edited, and filtered, as well as codified to promote legibility. A topographic map requires a legend, and the act of reading a map requires a back and forth between this key and the drawing. In its final form, the topographic map offers a precise reading of landform, material, and occupation at a humanly accessible scale. It allows for immersion, through which the landscape can be seen, imagined, and ultimately designed.

Design plan

The plan is a representation of a design or a proposal. It is drawn at a relatively large scale — rarely exceeding 1:10,000 — except when denoting broad context or location. By definition, the plan is a projection of a three-dimensional space onto a horizontal plane or surface, though this distinction is of less importance than its purpose as a 'directive document that serves as a guide for some action in the future' (Treib 2008: 113). The plan is a view of the future landscape, used to show the relationships between elements as well as the total expression of those parts. It is an abstraction that often favours geographic and geometric coherence but can be embedded with human perception and experience. Like the map, it requires skill in drawing and reading to understand the phenomenological and atmospheric qualities of the landscape. Limited in its ability to express the temporal and dynamic, the plan — as with the map — often expresses one place in one view at one future moment in time. It is most revelatory as a compression and notation of a larger spatial idea that can transcend pattern and two-dimensional composition to engage the four-dimensional environment. The plan, then, becomes a generator to envisage and make space, a tool to project, design, speculate, imagine, and propose what is possible.

Here, I return to the question of time and argue for maps and plans to be more deliberate about their relationships to time as well as more provocative about their expressions of temporal conditions.

Maps and plans are composites, amalgamations of data and imagery from multiple perspectives and times. Yet, they take a singular form that often masks their multiplicity. Only in the fine print of the legend or buried in the metadata is there reference to the many origins and points of view instrumental in the translation from the real place to the projected drawing. This is true of older physical maps and their digital contemporaries. For example, National Geographic's stunning *The Heart of the Grand Canyon* map [**Map 1**] from 1978 is based on an aerial photograph from 1972, four and a half years of field survey that began in 1974 and 1,075 hours of relief painting to translate the three-dimensional topography into its two-dimensional form. Upon publication, the map appears to be a present-day depiction of a singular moment in time, rather than a layered image, built up over years, describing a recent past. This complex relationship to time is even more masked in digital production — where maps and aerial images are craftily constructed communication devices that seamlessly blend large quantities of data and imagery into one impossible view. As Laura Kurgan provocatively explains in a discussion of the new generation of *Blue Marble* images,[2] the contemporary ability to manipulate and distribute images is profound.

> 'The difference between the generations of Blue Marble images sums up a shift in ways of thinking about images, what they represent, and how we are to interpret them.'
>
> 'The new blue marbles now appear everywhere: in advertisements and as the ubiquitous default screen of the iPhone. So where you might think you're looking at image number AS17-148-22727, handcrafted witness to earthly totality, in fact what you're seeing is a patchwork of satellite data, artificially assembled — albeit with great skill and an enormous amount of labor. This is not the integrating vision of a particular person standing in a particular place or even floating in space. It's an image of something no human could see with his or her own eye, not only because it's cloudless, but because it's a full 360-degree composite, made of data collected and assembled over time, wrapped around a

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[2] *The Blue Marble* is a circular image of the entire globe. The first image was produced in 1972 and labeled image number AS17-148-22727. Recent updates include versions from 2005 and 2012.

> wireframe sphere to produce a view of the Earth at a resolution of at least half a kilometer per pixel — and any continent can be chosen to be in the center of the image. As the story of the versions suggests, it can always be updated with new data. It bears with it a history that mixes, unstably, both precision and ambiguity and that raises a series of fundamental questions about the intersection between physical space and its representation, virtual space and its realization' (Kurgan 2013: 11-12).

In other cases, the map depicts not only different times but also different levels of resolution, different sources, and different points of view. For example, OpenStreetMap, an open-source repository of geo-spatial information, celebrates its local, community-driven enterprise as a means to increase the number of people gathering and using information. The idea is that local knowledge will increase the extents and resolution of the data while making the information freely accessible will increase access and distribution. Yet, the multiple contributions and translations further muddy the map's temporal reading. The composite nature of the map is extremely extensive. The map has many sources, so many that it is arguably source-less. It becomes impossible to date. It exists only in the present, and while some features are out-of-date the idea is that someone will soon notice and re-map the conditions. Time is beautifully continuous while the accountability is frustratingly absent.

OpenStreetMap, like Google maps, Waze, and other navigational aids, becomes an underlying source, the base for the way we see, understand, move through, and imagine our world. We must be cognizant of the collapses of time and space that occur in mapping as well as the representational choices that govern how we use and interpret both the map and the space for which it stands in. Techniques of drawing have changed with time, both as the technology advances and the use of maps and spaces fluctuate. For example, the Google Map — introduced as a web-based product in 2005 — radically changed the map-user's experience. The web-interface allows for mass customisation of a dynamic map, through zooming, panning, rotating, and changing views and visible layers. The practicality and functionality rate so highly with users that they become desensitised to the underlying representational choices. The continuous integration of additional features — routing, traffic, transit routes, perspectival views, terrain depiction, satellite imagery — pushes the product beyond traditional map capacities. In fact, the map is rarely used for its pure map capacities, and the representation of the roads, for example, has lost some clarity, coding, and specificity in newer versions. It is harder to read the distinction between road types as all roads are rendered orange and grey, forcing some to disappear into the background landscape (Demaj and Field 2012). Routes are generated through the typed directions rather than read visually from the lines on the map. The map becomes a repository of linked data rather than a legible depiction of a given geography.

Furthermore, these ubiquitous repositories are rarely explicit about the choices that they are making, about what is shown and what is omitted, about what is known and unknown, and the relationship of this information to time. This is the role of the legend on a traditional map, itself a repository buried during digital translation. On the legend, the conventions and symbols used on the map are extracted, amplified, and explained. These contain references to the content and aim. In addition, on the margins of the map, often close to the legend, there is information regarding the making of the map: its date, its sources, its ownership, and its scale and projection. Embedded in these keys are references to time. For example, in the legend of the 1966 Nimrod Glacier map [**Map 2**], one of the Topographic Reconnaissance Maps of Antarctica from the United States Geological Survey (USGS), there are notes regarding the mapping process: the document was compiled in 1964 from US Navy trimetrogon aerial images[3] taken between 1960 and 1962. These facts are unremarkable, pointing only to the aforementioned time lapse in mapping. However, what is remarkable in this particular image is: the graphic integrity of the terrain visualisation — with spot elevations, contour lines, and relief shading — and the overt recognition of the resolution of knowledge. The contours included show three levels of confidence relative to the topography. They make a distinction between *definitive* contours (solid lines), *approximate* contours (long dashed lines) and *conjectural* contour lines (short dashed lines). Here, there is the idea of an incomplete picture, one that may become more complete with more survey time, but one that can never be complete in a single image, given the dynamic nature of the glacial landscape. The map also distinguishes between *ice* and *ice-free* areas, again a fluctuating condition. It also provides a necessary warning for the intrepid: *absence of the crevasse symbol does not necessarily indicate a crevasse-free area*. Through simple text and line variation, the *Nimrod Glacier* maps key pays homage to the complex, dynamic, dangerous, and difficult to capture qualities of the remote landscape. Without obfuscating the

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[3] This is a system of aerial mapping where three cameras are used — one from a vertical, one from an oblique left and one from an oblique right point of view — to create a single assembled image of the area being mapped. These aerials are taken at regular intervals across the territory.

representation of the terrain itself, the mapmakers have addressed the temporal and ephemeral characteristics behind the physical formations.

This leads to the critical question: what are some of the methods of introducing time onto the map and the plan? Here, I will discuss a few simple means: line variations, color gradients, and hierarchical layers.

Line variations

The *Future Cities Lab* design office, through its *Aurora* project, tackles the cartographic and projective challenge of the changing Arctic landscape. The maps present the changing territorial boundaries of the region at multiple scales. They use variations in line type and date annotations to mark the fluctuations of the ice area as well as the shifting locations of buoys as they respond to the climate and territorial claims [**Map 3**].

The line is a simple and powerful tool. A line, broadly speaking, is any elongated continuous mark or discontinuous series of marks (as a line of dots) on a map that serves as a sign for some geographical phenomenon or concept. Lines represent both physical features and distances between places. The line typology describes a hierarchy of physical presence and character in the landscape. The thickness or density of lines alone can reveal patterns of movement, settlement, and urbanisation while choices of type encode information [**Maps 4 and 5**].

Time is often a variable dictating the type of line symbol. For example, the atlas *Les Travaux de Paris* uses colour-coded lines to demonstrate engineering feats to a public audience. The individual plates show the evolution of the subterranean Paris landscape and its utilities over time. For example, plate VII illustrates the sewer system in 1878, showing those sewers existing in 1855 in blue and those constructed between 1855 and 1878 in red. Both time and function are highlighted through simple and powerful representational techniques, making it possible to imagine the intricacy of underground infrastructure expanding in response to the city above [**Map 6**].

Colour gradients

Geological maps use rich colours to express time directly through the stratigraphic column. The stratigraphic column accompanies the planar geologic map as a diagram used to order and date rock units and as an index to identify those units on the map. Colour is fundamental to a stratigraphic column. It is the near universal system of coding. The wide range of rich colours is alluring, but the transition between the diagram and map is difficult for the untrained eye. The colours reveal the unseen, and, for the non-geologist, the unfamiliar with very few significant landmarks for orientation [**Map 7**].

While surficial geographical information is buried, temporal information is foregrounded. In some cases, the colour relates directly to the stratigraphic age of the rock, representing geological time: younger rocks have paler colours and older rocks suffer darker shades [**Map 8**]. The result is a tonal map of time, overlying a geographical map of space.

Hierarchical layers

Time is often invoked in layers, with the graphical hierarchy corresponding to age and resolve. The result is a composite image where multiple time periods are visible simultaneously. Through line weight, tonal change, and level of detail, different conditions — from past to future — are highlighted. For example, in urban designer Joan Busquets' *Old Town Barcelona* plan [**Map 9**], the buildings are coded by era and historic status. The listed buildings have articulated plans, revealing the structural elements and interior spaces in black. The associated archeological ruins are similarly detailed in red. Time is collapsed, merging the present and past fabrics. Residential buildings frame these fine-grained elements, themselves coded by type and era of construction. The result is a highly differentiated and layered depiction of the urban fabric. While the map is static, it portrays an understanding of the old city as an ever-changing condition, built and un-built over time. Through a clear and sophisticated coding system, the complexity of the city is revealed.

Overlays and hierarchies serve to introduce past conditions and future intentions onto maps and plans. In the 1911 *Plano General de Barcelona* [**Map 10**], the deep ochre blocks of Eixample fade to ghosted lines of planned blocks, distinguishing between the inhabited city and the growing city of the future. Here, the plan and map collapse, the built and the projected coexist in a single document. This type of coexistence is a powerful tool to envisage the transformation of a landscape, to render the imaginary, to communicate design intentions. For landscape architect Charles Eliot, the topographic plan was the ideal base for his proposal for a metropolitan park system [**Map 11**]. Eliot was an early advocate of the overlay method of representation and design. He collected, from printed resources and extensive fieldwork, and mapped many layers of information in order to locate the ideal properties for the parkland expansion. The vision, as mapped, could be seen in relation to the geological and cultural layers of the existing city.

The French engineers involved in the nineteenth-century transformation of Paris too understood the power of the overlay as a means to collapse time. In the *Plan des Courbes de Niveau du Parc des Buttes Chaumont* [**Map 12**], parks director Jean-Charles Adolphe Alphand and his associates render the existing topography in black contour lines and proposed in red contour lines. The technique allows both for the visualisation of a dynamic process and for the communication of procedural mastery to a public audience (Komara 2009).

The plan and the map become means to understand the past spatial conditions of a given territory as well as its future potentials. Through variations in lines and tones, and through the overlay and differentiation of temporal information, the dynamic character of landscapes can be imagined. Cartographic conventions serve to articulate the space between the past — what is no longer — the present — what is given — and the future — what is yet to come.

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Maps

Map 1: Richard Rogers Peele, Bradford Washburn, Tibor Tóth (1978), *The Heart of the Grand Canyon* [Reproduced with permission from Ng Maps/National Geographic Creative, Courtesy of the Harvard Map Collection, Harvard Library, Harvard University].

François Emile Matthes, a renowned topographer and geologist, completed the first real survey of the Grand Canyon Bright Angel area between 1902 and 1904. Inspired by Matthes' work and motivated by their own sense of cartographic adventure, Bradford and Barbara Washburn led an expedition to re-map the Grand Canyon in 1974. The effort focused on the 170-square-mile heartland of the canyon — the area most visited by tourists — and the same area included in 1902–04 Matthes survey. The mapping expedition required 146 days of fieldwork spread across four and a half years. The process included extensive climbing and exploration and a recorded 695 helicopter flights, as well as a recently introduced laser beam, allowing for new degrees of precision across massive distances. The final map, a National Geographic classic, embodies incredible precision, both in its underlying survey and in its drawing technique.

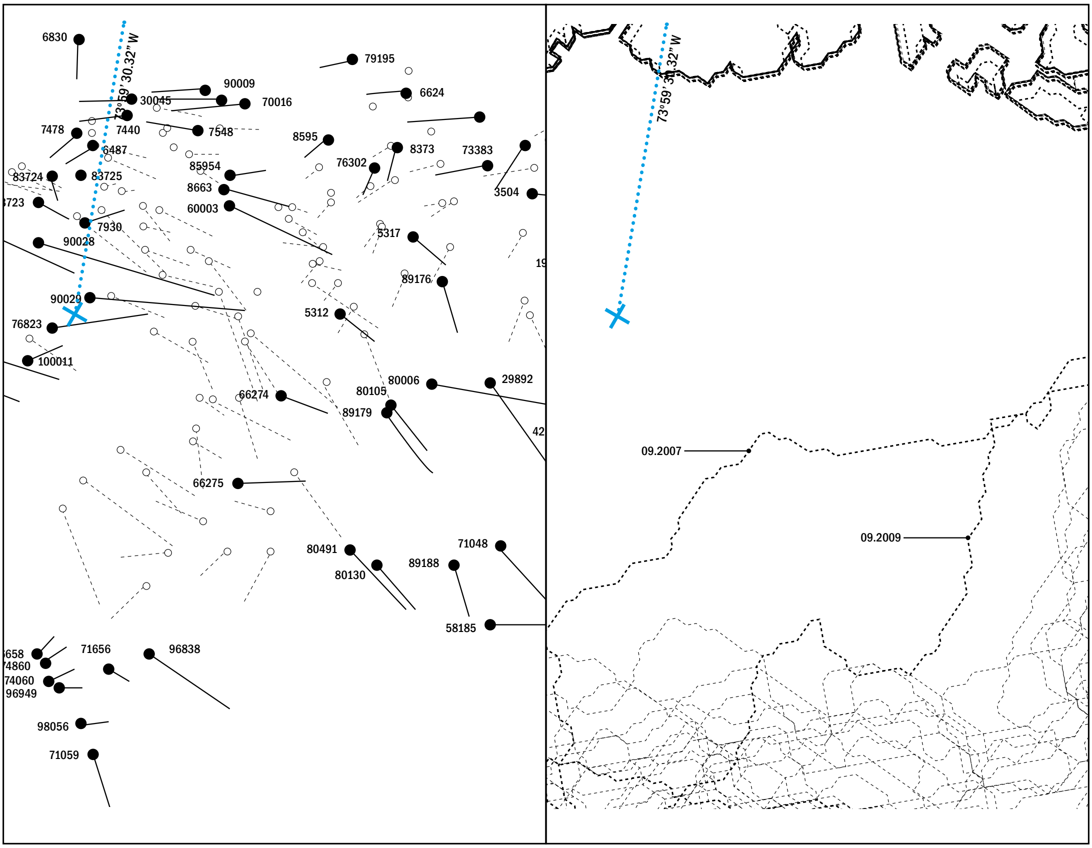
'The Heart of the Grand Canyon was the largest (36 x 36 inches) and most time consuming (1,075 hours) acrylic relief that I painted during my twenty-two years at the National Geographic. I like to think of it as my "relief thesis" because it effectively incorporated all that I have learned about relief shading up to that point. It was produced approximately half-half with airbrush and brush. The contour base was the result of a 1972 aerial photography and field survey, so I am confident that the relief is the most accurate and detailed acrylic painting even to this day' (Tóth 2008).

Map 2: United States Geological Survey USGS (1966), *Nimrod Glacier, Topographic Reconnaissance Maps of Antarctica* [Courtesy of USGS].

The USGS began sending surveyors to Antarctica annually in 1957 to work with the navy in establishing geodetic control and to gather mapping-quality aerial photography. The topographic reconnaissance maps that resulted are visually extraordinary, with a combination of terrain rendering techniques that bring a visceral quality to a remote environment. Contours, shading, hachures, and colour are all used to describe the topography and ground condition (moraine, glacier, crevasse, ice shelf, iceberg, fast ice). Distinctions are made between known information and conjectures (solid versus dashed lines). The proximity of the cartographer to his material is registered through the drawing conventions. The relationship with the landscape is embedded in the process of depiction.

Map 1: The Heart of the Grand Canyon.

Map 2: Nimrod Glacier, Topographic Reconnaissance Maps of Antarctica.



Map 3: Future Cities Lab (2009), *Aurora* [Courtesy of Future Cities Lab].

A true synthesis of cartographic and design process, these drawings represent the fluctuating territorial boundaries of the Arctic while providing the groundwork for possible sites of intervention. They offer a complex reading of the landscape through restrained representational tools — repetitive lines and forms, hatches, vectors, and dots. Through repetition and variation they show shifts over multiple time scales. The overlapping lines in *Erode* track the fluctuating extents of the Arctic sea from 1983 to 2009 while the shifting dots and lines in *Drift* articulate the temporal and ephemeral qualities of buoy displacement.

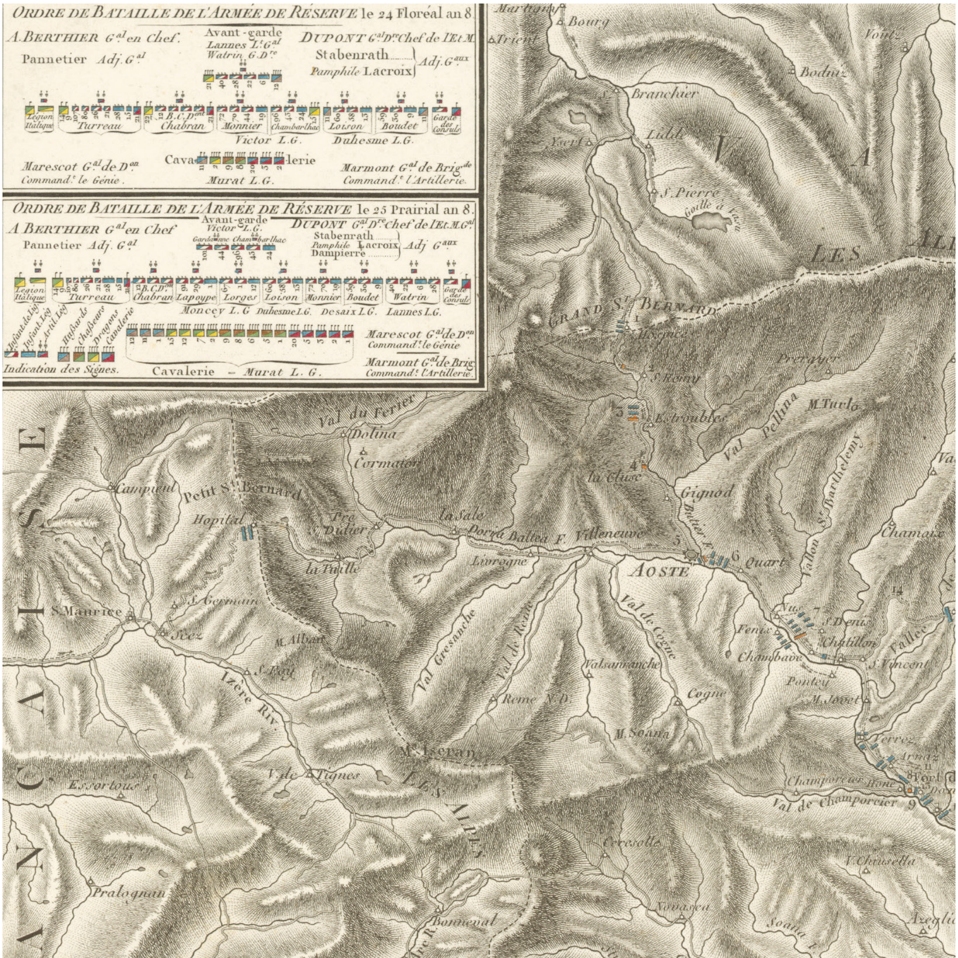
Map 4: Alison Smithson and Peter Smithson (1962), *Citizen's Cambridge Structuring Plan: the Nature of Place Restored* [Courtesy of Alison and Peter Smithson Archives, Frances Loeb Library, Harvard University Graduate School of Design].

The Citizen's Cambridge project proposed a re-structuring of Cambridge to relieve the pressures of population growth and increased traffic on, and reinstate the character of, the historic centre. The idea was to integrate the residential, civic, and university areas better and to redistribute commercial activity to lessen the toll on the historic fabric. A hierarchy of new roadways and walkways is suggested, as well as changes to the existing traffic patterns. Use restrictions by time of day and the re-orientation of traffic direction in certain cases concentrate traffic on fewer roadways and improve bus and bicycle access. The Smithsons treated the historic centre as a 'big building' to preserve through the insertion of a 'contra-centre' linked to parking and motor vehicle culture. The drawing conventions cleverly describe the traffic pattern changes, the new car-dominated structures, and the mobility-driven structure of the plan. A reading of the key alone is sufficient for understanding the underlying concepts behind the plan.

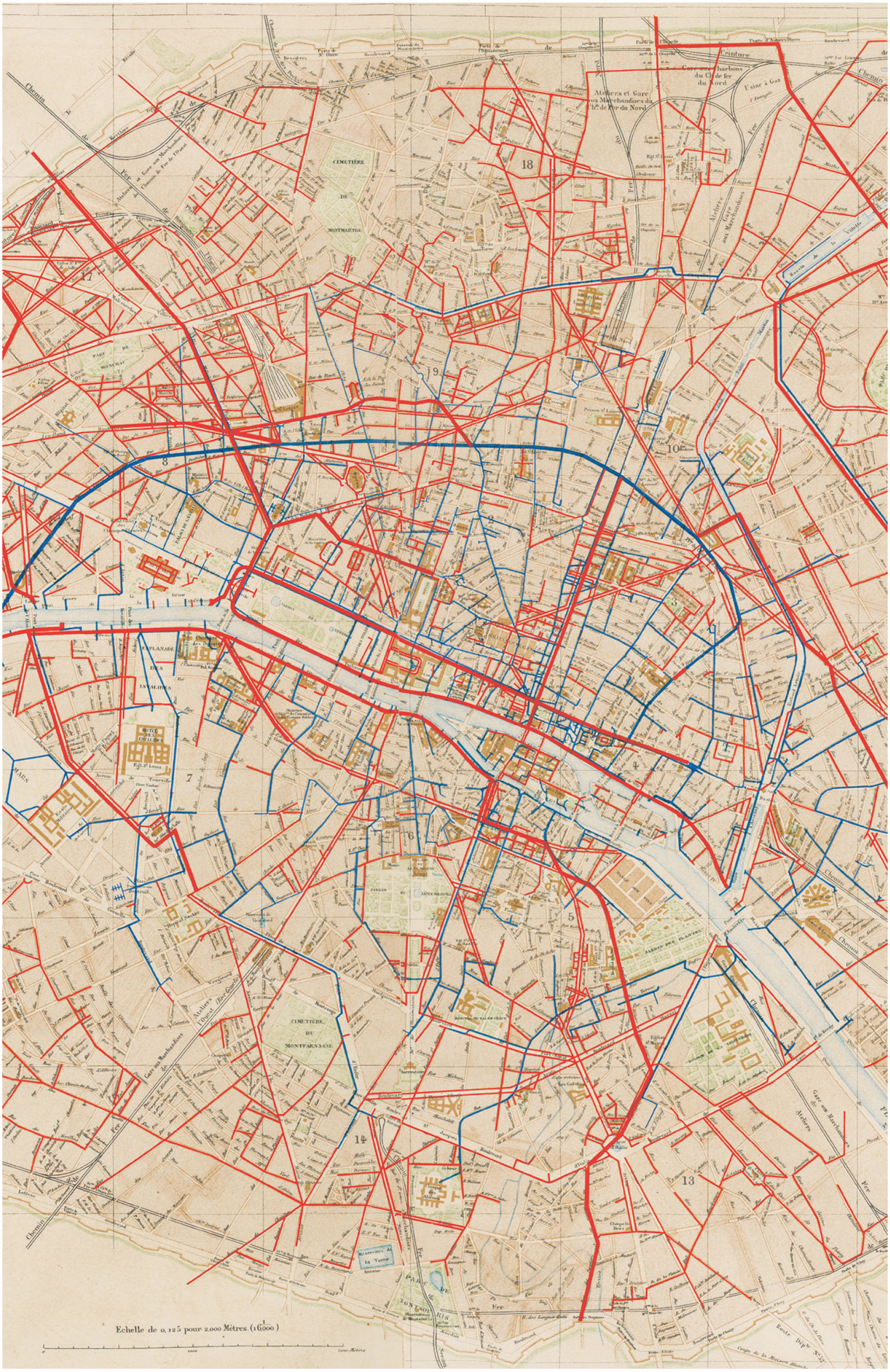
Map 5: Pierre Lapie (1803 est.), *Carte générale des marches, positions, combats et batailles de l'Armée de Réserve depuis le passage du Grand St. Bernard, le 24 Floréal An 8 jusqu'à la victoire complette & décisive remportée à Marengo, le 25 Prairial.* Paris: Tardieu [Courtesy of Pusey Map Collection, Harvard Library, Harvard University].

Lapie has developed a graphic method to depict troops moving through the Alpine landscape. The convention allows for both the portrayal of the hierarchical system of troop orders as well as the non-linear positions of the troops within the terrain. This map celebrates Napoleon Bonaparte's victory over Austrian troops at the Battle of Marengo on 14 June 1800. The graphic key is paired with a written table that provides a day-by-day account of military advances and retreats, sieges and skirmishes (Garver 2009).

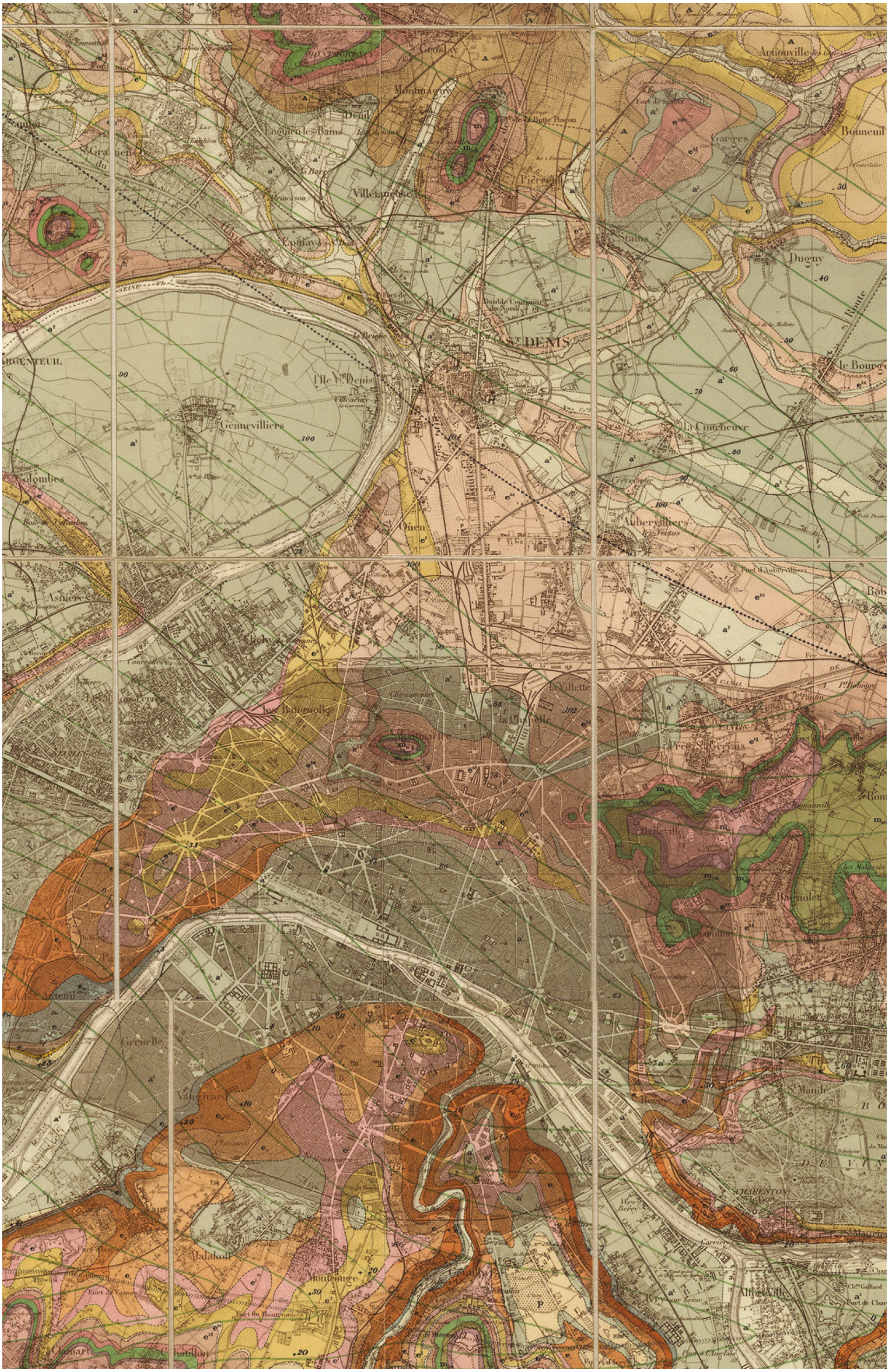
Map 4: Citizen's Cambridge Structuring Plan: the Nature of Place Restored.



Map 5: Carte générale des marches, positions, combats et batailles de l'Armée de Réserve.



Map 6: Les Travaux de Paris.



Map 7: Paris et ses environs.

Map 6: Imprimerie Nationale (1889), *Les Travaux de Paris*, plate VII [Courtesy of Frances Loeb Library, Harvard University Graduate School of Design].

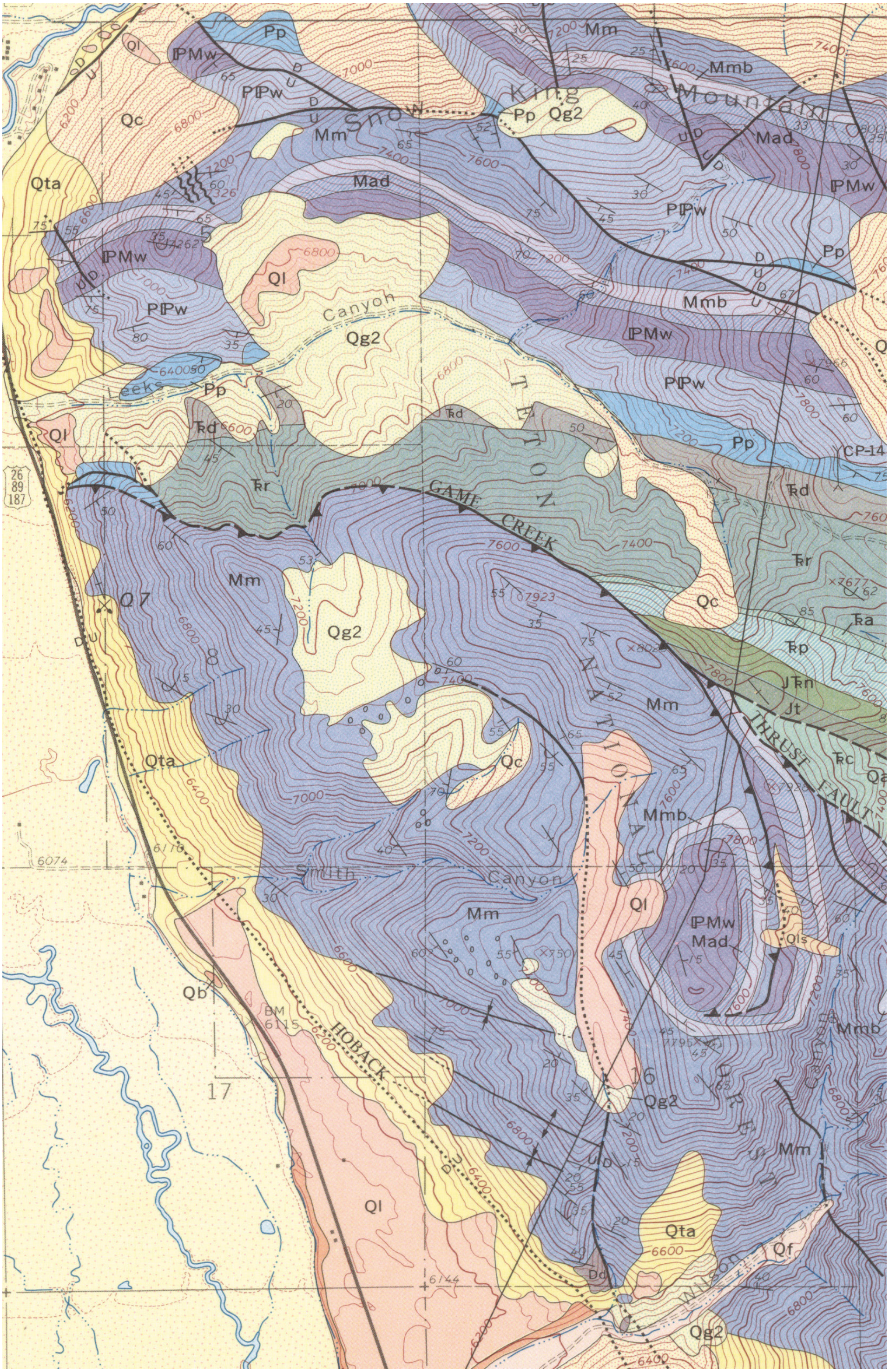
The urban subterranean zone is marked by its geological strata and its infrastructural network. *Les Travaux de Paris* is an atlas that focuses on the latter as a means to describe the technical advancement and modernisation for the World Exhibition held in Paris in 1889. The plate shown illustrates the sewer system in 1878, showing those sewers existing in 1855 in blue and those constructed between 1855 and 1878 in red. The collapse of the vertical space between the physical features of the surficial city and its underground support structure makes the interdependence of the two evident. Both time and function are highlighted through simple and powerful representational techniques.

Map 7: Service Géologique des Mines (1890), *Paris et ses environs* [Courtesy of David Rumsey Map Collection].

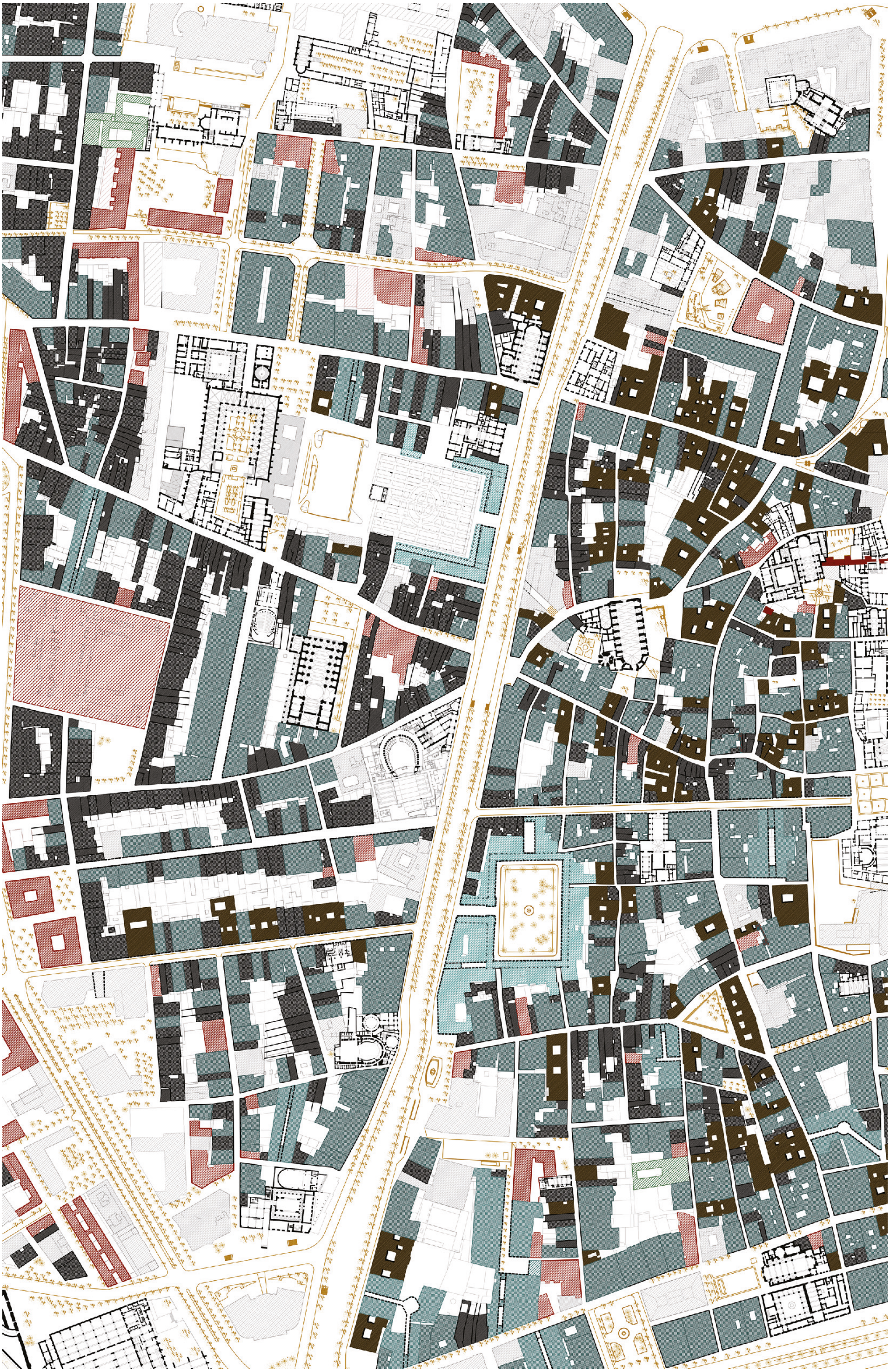
While *Les Travaux de Paris* focuses on the subterranean infrastructural network, this incredibly detailed geological map of the city from the same period correlates the layers of underground rock with the extents of urbanisation above. Structured around the meandering River Seine, the map shows known, invented, and hidden geological contours, fold lines, fossil sites, and colour-coded rock types that roughly correspond to their natural appearance. It also shows roads, buildings, fields, and vegetation in great detail. The geological information is coded and requires a legend, while the rendering of surface habitation reads without translation: the roads have thickness, the vegetation has texture, the building footprints are filled in, and the topographic relief is hatched.

Map 8: J.D. Love and Howard F. Albee (1972), *Geologic Map of the Jackson Quadrangle, Teton County, Wyoming* [Courtesy of Cabot Science Library, Harvard University].

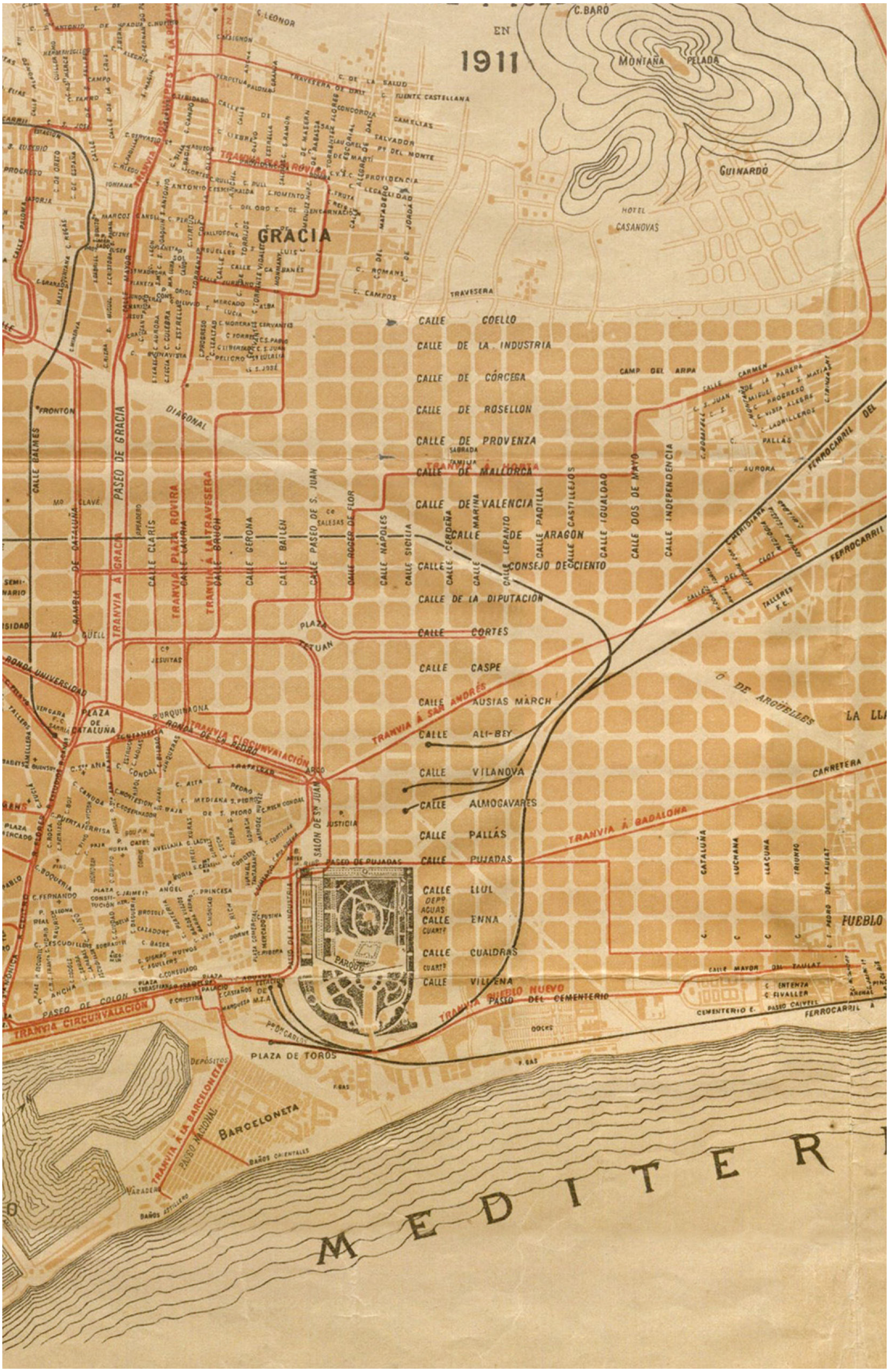
American geologist J.D. Love is a central figure in the history of geological cartography known for his exemplary fieldwork, surveys, and maps of his native Wyoming. Educated at the University of Wyoming and Yale University, Love worked for the United States Geological Survey. He was commissioned in the 1950s to create the first statewide geological map of Wyoming, standardising data and representation conventions across a large and complex territory. His Jackson Hole map is considered one of his most significant accomplishments. Historian Alex Maltman elaborates: 'The Precambrian rocks that make the spectacular Teton Mountains, back-drop to many a movie; the complicated, still active tectonics; and the intricate terraces of the Snake River have all been subjected to Love's unrivaled abilities and beautifully recorded in a series of 1:24,000 sheets' (Maltman 1998: 213).



Map 8: Geologic Map of the Jackson Quadrangle, Teton County, Wyoming.



Map 9: Old Town Barcelona.



Map 10: Plano General de Barcelona.

Map 9: Joan Busquets (2000), *Old Town Barcelona* [Courtesy of Joan Busquets].

Urban designer Joan Busquets has devoted much of his career to the city of Barcelona, as a researcher, a planner, and a designer. His analytical drawings reveal the morphology of the city and describe its transformation through time. His plan of the Old Town, an adaptation of a Nolli-type plan, uses a rich coding system to depict monuments, open spaces, and building typologies of the historic city. Listed buildings and archaeological ruins are drawn as architectural plans, showing the scale and texture of the urban fabric, allowing the viewer to enter the buildings through the drawing. National monuments are hatched over in red, linking them to the similarly rendered contemporary and modern public buildings. The residential fabric is shown in tones of black and grey.

Map 10: Francesc Puig (1911), *Plano General de Barcelona* [Courtesy of Pusey Map Collection, Harvard Library, Harvard University].

The 1911 general plan of Barcelona depicts the projects for the widening of streets and the extension of the city towards the surrounding mountains (indicated loosely with contours). The map is dominated by the regularity of the Barcelona blocks, juxtaposed against the organic figures of the older parts of the city. Using the signature colour of the route and contrasting nicely with the ochre blocks, the newly-electrified tramway lines indicate the pull of urbanisation outward. The solid blocks of the *Eixample* fade to ghosted lines of planned blocks, distinguishing between the inhabited city and the growing city of the future.

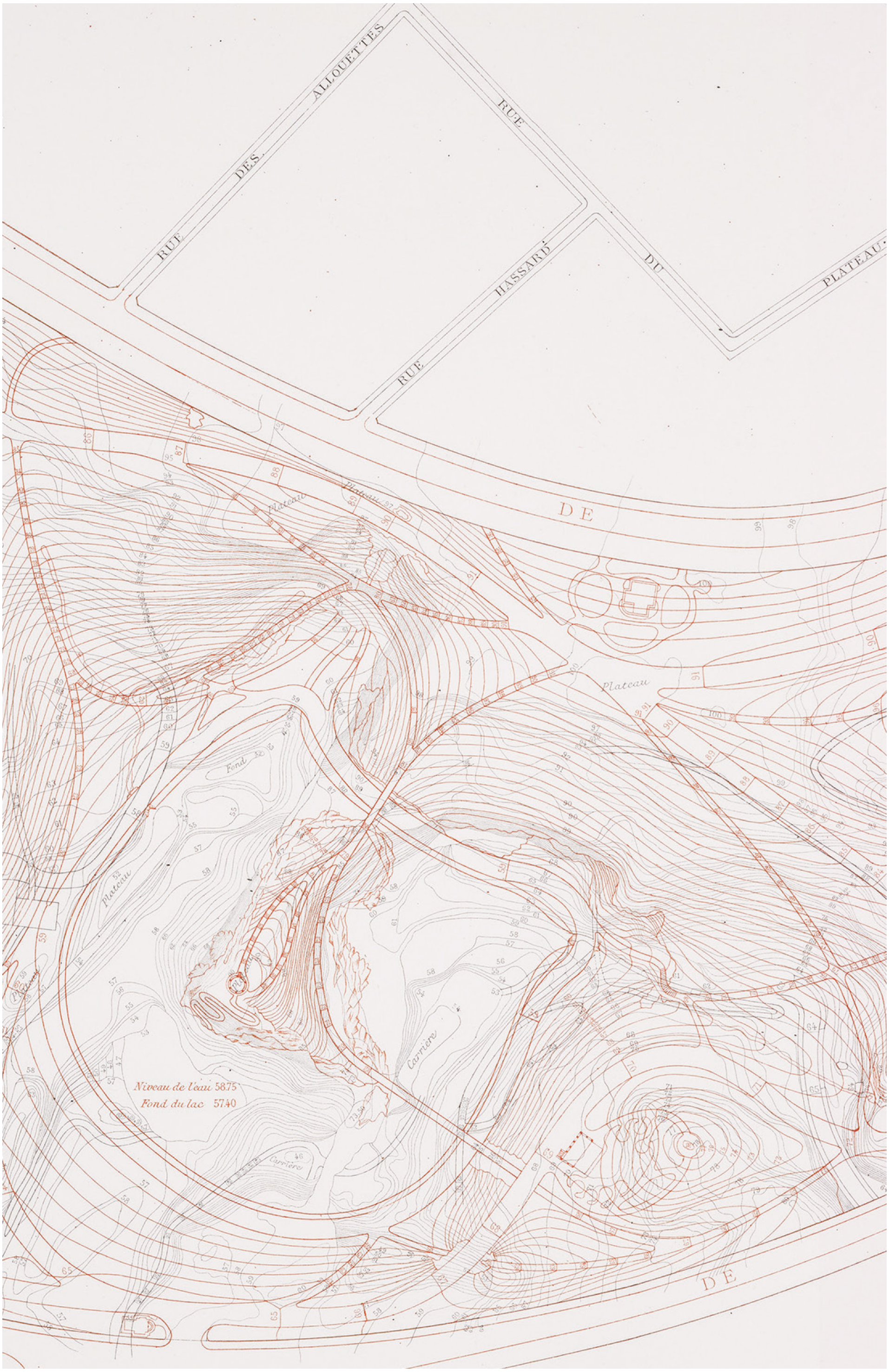
Map 11: Charles Eliot (1893), *Map of the Metropolitan District of Boston* [Courtesy of the Frances Loeb Library, Harvard University Graduate School of Design].

The landscape architect Charles Eliot and the journalist Sylvester Baxter conceived of and promoted a system of interconnected parks and parkways ringing the city of Boston. The Map of the Metropolitan District of Boston of 1893 delineated the existing public reservations in green and those proposed by Eliot in orange. The map was printed, folded, and attached to Eliot's bound report to the Metropolitan Park Commission. In this copy, the colour registration is slightly off but the correlation between the topographical, geological, and hydrological systems — included as part of the base map — and the proposed park system is evident. Eliot was an early advocate of the overlay method of representation and design. He collected, from printed resources and extensive fieldwork, and mapped many layers of information in order to locate the ideal properties for the parkland expansion.

Map 12: Jean-Charles Adolphe Alphand (1867–71), *Plan des Courbes de Niveau du Parc des Buttes Chaumont*, Promenades de Paris. Paris: J. Rothschild [Courtesy of the Frances Loeb Library, Harvard University Graduate School of Design].

Under the direction of Georges-Eugène Haussmann, engineer and parks director Jean-Charles Adolphe Alphand transformed a former quarry and refuse dump into romantic parkland. The technique of overlaying the before and after contours, with the proposed highlighted in red, shows the dynamic process in a single image. The curvilinear design language emerges from the rough site, accentuating and amplifying the existing landforms, while deliberately leaving rough edges in places. The drawing demonstrates the merger of the technical and aesthetic mastery found in the design.

Map 11: Map of the Metropolitan District of Boston.



Map 12: Plan des Courbes de Niveau du Parc des Buttes Chaumont, Paris.