

Methods in Contemporary Linguistics

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Methods in Contemporary Linguistics

edited by

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IN HONOUR OF IWAR WERLEN

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Introduction

Andrea Ender, Adrian Leemann and Bernhard Wälchli

1. Why this volume on methods and methodology?

Linguistics is all about the study of language.¹ However, in as much as linguists pose different questions about language, they also engage in different processes of inquiry about their subject of study. Linguistic analyses are always shaped by the kind of data used and the assumptions underlying their interpretation, regardless of whether or not this is made explicit by the researcher. This kind of “linguistic relativity” is different from the well-known and much discussed Whorfian relativity principle, which says that “all observers are not led by the same physical evidence to the same picture of the universe, unless their linguistic backgrounds are similar” (Whorf 1956: 214; see Werlen 1989a, 2002a, 2002b for the history of the idea of linguistic relativity). The “second linguistic relativity principle” alluded to here is not about how language shapes thought and perception, but rather about how linguistic data and methods in linguistics shape linguistic theory. Every linguist’s theoretical view on language is affected by the language material they work with, and by the methods they apply.

It is sometimes argued that *methods* (to develop and to apply methods) and *methodology* (to reflect and write about methods) are two completely different things. There is undoubtedly some difference between applying methods and reflecting about methods, but method and methodology go hand in hand, especially if methods and methodology concern the treatment of concrete data in bottom-up rather than top-down methodological approaches. The present volume illustrates this point and insists on the necessity of making the discussion of methods and methodology more explicit across subfields of linguistics. To modify a famous saying by Immanuel Kant, we can say that methodology without developing and applying methods is empty and research without methodological reflection is blind.

Due to different strands of linguistic research and the influence of various neighbouring disciplines, there has been a noticeable growth of linguistic methodology. The importance of methods and methodological concerns has been tackled in various ways in older as well as more recent publications: linguistic methods can be related to the theory of science in general

(Bartschat 1996; Bierwisch 1971; Schecker 1976); they can be investigated with a focus on the dichotomy of quantitative vs. qualitative research, or on either of these approaches (see Litosseliti 2010; Johnson 2008; Rasinger 2008); their investigation can be oriented towards various linguistic subfields, such as applied linguistics (Coffin et al. 2010; Dörnyei 2009), discourse analysis (Wodak and Meyer 2009), sociolinguistics (Milroy and Gordon 2003), field linguistics (Vaux and Cooper 2005), etc.; or they can serve as practical guidelines for students or researchers (Wray and Bloomer 2006).

A volume that focuses on methods and methodological aspects in a variety of linguistic subfields can promote a more profound understanding of contemporary linguistics and the diversity in the scientific study of language. At once, a thorough description of how data has been gathered and analysed illustrates that methodological decisions often cannot be separated from questions of linguistic theory.

Linguistic methodology – like methodology in all sciences – is concerned with the relationship between theory and data. According to Labov's *Principles of Linguistic Methodology* (1971), methodology is the careful, serious search for error in one's own work, where the best theory is the one that is most easily disconfirmed. This is well in line with Popper's hypothetical-deductive approach in philosophy of science that theory cannot be verified by experience, it can only be falsified or "singled out by means of empirical tests, in a negative sense: *it must be possible for an empirical scientific system to be refuted by experience*" (Popper [1959] 2002: 18). As pointed out by Bisang (2011: 238), generalizations can also be induced from the comparison of data, but the major challenge for falsification in linguistics is reproducibility, since "validity of regularities and generalizations claimed by linguists crucially depends on reproducibility, i.e., on certain factors that are necessary to define a speech situation" (Bisang 2011: 237). Reproducibility in linguistics, however, is limited due to a high amount of variation: "Functional factors create variation via the difficulty of the task faced by the speaker to comply with a large number of rules almost simultaneously...Social factors are responsible for variation because different structures may be associated with different social settings" (Bisang 2011: 240; see also Croft 2000). As shown by Kretzschmar (2009) variation is often underestimated even in linguistic approaches traditionally devoted to variation such as dialectology and sociolinguistics. In the same vein, Werlen (1977: 37) already criticized the assumption of linguistic homogeneity, and underlined that the integration of variation has to be accompanied by the serious search for adequate theories and methods.

Methodological discussion seems to be associated closely to research with empirical focus rather than to theory-centred research. In this connection it is interesting to note that one of the very first paragraphs in John Locke's *Essay Concerning Human Understanding* is titled "Method": "It is therefore worth while to search out the bounds between opinion and knowledge; and examine by what measures, in things whereof we have no certain knowledge, we ought to regulate our assent and moderate our persuasion." (Locke [1690] 1952: 93). Now it is not possible to simply equate empiricism with empirical research and we do not want to claim in any way that rationalism is less methodological than empiricism. It is the status of the data that seems to constitute a major difference between empiricist and rationalist approaches. Whereas in rationalist approaches the theory drives the interpretation of the data, in empiricist approaches generalizations can emerge from the data. Hence, methodology, i.e. concerns about the collection, understanding and analysis of data, is particularly important for empirical research. It is not astonishing, therefore, that all papers in this volume – despite all their differences – can be said to be contributions to empirical linguistics.

All papers in this volume are examples of how specific methods can be applied to answer linguistic research questions. Thereby, the volume is not a theory-driven systematisation of methodological approaches, but a demonstration of the diversity of scientific practices in linguistics. What we deal with here is "bottom-up" methodology rather than "top-down" methodology. Hereby we adopt the approach that explicit reflection on the methods applied in the study of language can deepen our understanding of fundamental concepts in linguistic investigations. As such, contemporary methodology enhances the significance of various processes of scientific inquiry that are unified in their aim to better understand, describe and explain forms and functions of language. In this spirit, the present volume is the product of twenty-five linguists reflecting on their methodological concerns. At this point, we would like to thank forty-four anonymous reviewers, whose rigorousness significantly improved the quality of the volume. The collection of papers demonstrates that reflection on methods is a vital and integral component of original research and thereby overrides negative attitudes towards explicit highlighting of methodological concerns.

2. Issues in attitudes towards methodology

The relevance of explicitness in methodological concerns becomes most apparent when facing positions that are critical towards methodology. However, some words of caution are in order here. First, we want to consider attitudes towards methodology here, not attitudes of researchers in general. The same author can be very explicit about some aspects of methodology without discussing some other methodological aspects in the same work. Second, being explicit about methods and methodology is not tantamount with good methodology. There are many books and articles in linguistics following rigorous methods where methodology is not discussed. In such cases researchers can be aware or non-aware of their methodological approach. Unconscious brilliant methodology is very much the same thing as good intuition, and intuition plays an important and much underestimated role in linguistics as in other disciplines. Researchers can also be aware of their methods without discussing them explicitly. Awareness, explicitness and quality of methods are thus basically three different things. In the following, we simplify a lot by focussing on two negative attitudes towards explicitness of methodology. The names given to these attitudes are our own.

A time-honoured negative approach to methodology can be called “*methodological pessimism*”, nicely put into a formula by the Leipzig philologist Gottfried Hermann (1772–1848): „Wer nichts über die Sache versteht, schreibt über die Methode“ (Who does not understand the matter, writes about the method) (Koechly 1874).² We think that methodological pessimism rests on two misunderstandings: (i) it is possible to do linguistics without method, and (ii) reflection on method is different from doing research. Doing research and reflecting on methods is tightly connected in bottom-up methodology as practiced in this volume. We think that reflection on method is a crucial and integral component of research, especially of innovative research. To make this reflection explicit is particularly important for making approaches more accessible across most different research traditions. Explicit reflection on method can thus foster the mutual understanding of researchers in different linguistic sub-disciplines.

Of course, there may be different opinions about how much energy should be devoted to making methodical reflection explicit. With respect to this question, Miles and Huberman state that “[a]t times it seems as if the competing, often polemical arguments of different schools of thought about how qualitative research should be done properly use more energy than the actual research does” (1994: 2). A stance that seems to be the completely

opposite to methodological pessimism at first glance – “*methodological optimism*” – has in fact quite similar consequences. For methodological optimists, the excessive discussion of methodological aspects will do no harm, but is unnecessary, since researchers will normally do the right things anyway even without amply discussing methods. Methodological optimists have strong confidence in the researchers’ right intuitions and in their readers’ ability to understand their argument even if it remains partly implicit. Experts know what to do and readers are also experts. However, a possible danger of methodological optimism is secluded research communities, not allowing access to outsiders. A major advantage of explicit methodological discussion is its broader perspective. The present volume unites most different approaches to linguistics which is possible in particular because methodological concerns are made explicit. Explicit methodological discussion is particularly important for general linguistics, which unites all approaches to linguistics.

In this book, published in honour of Iwar Werlen, methodological diversity in linguistics is illustrated with examples that are biased towards Switzerland. Innovative methodological aspects have always played an important role in Swiss linguistics (with the attribute *Swiss* being interpreted geographically, i.e. as standing for ‘having worked in Switzerland’). To provide just a few of the less well known examples, first, Louis Gauchat’s (1905) findings on variation in the patois of Charmey, based on data from speakers of three different generations – long before variation took centre stage in linguistics – should be mentioned here. With his error analysis of French, Henri Frei (1929) can be called a pioneer of the functionalist approach. Renward Brandstetter (1893, 1903) can be mentioned as one of the first linguists who applied the classical comparative method beyond Indo-European, more specifically to the large Austronesian language family ranging from Malagasy to Maori. As impressive examples of methodological vigorousness in sociolinguistics and dialectology, finally, Erika Werlen’s (1984) considerations on speakers’ individuality and language attitudes in dialectological methodology and Andres Kristol’s (1984) long-term study of language shift in the multilingual village of Bivio in the canton of Grisons can be mentioned. They underline that Iwar Werlen’s ambition for innovative and well-considered methods – to be considered in more detail in Section 3 below – can be said to be an integral part of a well-established tradition in Swiss linguistics.

3. Iwar Werlen's approach to method and methodology

As different questions about languages, their structures and usages call for the application of different methods, the breadth of linguistic interests shapes the richness of the methodological experiences of a researcher. Therefore, a linguist like Iwar Werlen with a research agenda comprising dialectology (Werlen 1976, 1980, 1983a, 1985a, 1986a, 2005a), sociolinguistics with a main focus on the German-speaking part of Switzerland (Werlen 1988a, 1993a, 2004), multilingualism (Lüdi and Werlen 2005; Werlen 2007; Werlen, Rosenberger, and Baumgartner 2011), conversation analysis (Werlen 1979, 2001, 2006), the theory of rituals (Werlen 1983b, 1987, 1994), linguistic relativity (Werlen 1989a, 2002a, 2005b), studies on the languages of the Philippines (Werlen 1993b, 1996a, 1996b), onomastics (Werlen 2008, 2010a), and modality (Werlen 1982, 1993b; Bader, Werlen, and Wymann 1994) can resort to a large inventory of methods and a rich experience with methodological questions. He does not take an “instrumental” stance by reducing the methodological concerns to ‘what works’ (Angouri 2010: 31), but is constantly involved in philosophical and theoretical debates related to the methodological choices that he makes. This section is not intended to provide a comprehensive overview of methods in Iwar Werlen's oeuvre, but a descriptive selection of methodological issues in his major fields of interest which exemplifies his distinct awareness of methodological concerns.

An aspiration for convergence of dialectological and linguistic approaches is present in his early studies on the dialect of Brig in the Valais (Werlen 1976, 1977). Iwar Werlen believed that dialectological work can profit from the explication of various phenomena by the integration of linguistic theory, and linguistics can enlarge its horizon and refine its theories with respect to language variation. He criticized the assumption of linguistic homogeneity and urges for a more serious investigation of variation accompanied by the search for adequate theories and methods (Werlen 1976: 37). He tackled issues on variation and its internal structure that are still of importance more than thirty years later, by stating that “it does not seem plausible to me that language should be a homogeneous system: this calls even more for an explanation than the per se a lot more plausible assumption that there is relative chaos in the language” (*Es scheint mir nicht so sehr plausibel, daß die Sprache ein homogenes System bildet: das scheint mir sogar sehr viel mehr der Erklärung wert als die an sich viel plausiblere Annahme, daß man es in der Sprache mit einem relativen Chaos zu tun hat.*) (Werlen 1977: 353, translated by the authors).

His emphasis on sociolinguistic issues can be illustrated with two examples. In the KISS study (*Kommunikation in einer Schweizer Stadt, communication in a Swiss city*), which was carried out in the framework of interpretative sociolinguistics, it is shown how the implementation of the theoretical concept of communication culture is methodologically problematic (Lieverscheidt et al. 1989, 1995; Werlen and Lieverscheidt 1989; Werlen 1989b, 1992, 1995). As only communicative behaviour is observable, this can serve as the basis for the underlying rules. By observing participants and conducting interviews and audio-recordings at different public places (hair studios, community centre, etc.), the different communication cultures in a Swiss City are reconstructed. In doing so, a distinction is made between descriptive parameters of communication cultures and interpretative means. The investigation of language biographies of second-generation immigrants (Werlen 1986b, 2002c) is an example of sociolinguistic research where interviews provide the majority of data. These interviews are not only analysed with respect to the content of the narratives (social data, academic achievement, acquisition of the different languages, functions of the languages involved, language loyalty, bilingualism and language competence), but also as the medium of data collection itself, which means that the interview is considered in more general terms as constituting a social event.

Identifying and analysing the logic of ritual communication, Iwar Werlen resorts to corpus data (Werlen 1983b) and speech data from church services, radio shows or doctor–patient-interactions (Werlen 1987, 1996c). In his investigation of how people deal with different everyday life experiences in speech in highly diverse contexts such as celebrating the holy mass and getting over a personal failure in a game show, he studies the role of language in human action and defines the linguist’s primary role as that of an observer for the purpose of reconstruction. He conceives of the work of a linguist as being descriptive, not prescriptive (Werlen 1988b: 79). The linguistic elements under scrutiny with respect to the interaction of language and ritual cover the areas of modal verbs (Werlen 1983a) and particles (Werlen 1983b).

The project about second dialect acquisition by people moving between different parts of the Alemannic-speaking region of Switzerland is shaped by the fusion of dialectological and sociolinguistic issues. The data combines interviews and elicited production data with analyses of the social network. How people produce a specific dialect feature in free and in prompted speech, and how consistent they are, is taken to reveal how much they have acquired of their second surrounding dialect, and how this dialect

behaviour eventually relates to their social networks and other variables (Werlen et al. 2002; Matter and Werlen 2002).

Overall, Iwar Werlen's approach to language focuses on the use and function of linguistic means, be it the analyses of particles in Swiss German dialects, showing that they fulfil a ritual function (Werlen 1983b), or the analysis of modality as the ways speakers express (un)certainly about the content of an utterance (Werlen 1985b). This becomes most obvious in the study of multilingualism in society as well as in individual speakers (Werlen, Tunger, and Frei 2010), and when dealing with the linguistic competence of individual speakers (Werlen and Zimmermann 1996; Werlen 2010b).

4. The structure of this volume

The volume at hand takes the methodological breadth of Iwar Werlen's work as an inspiration and tries to replicate it – in that the contributors of this volume were selected as representatives of coming from diverse methodological backgrounds. It is divided into five sections: core domains, cross-linguistic and language-internal diversity, dynamic language, writing, and a section entitled “language, space and society”.

By *Core Domains* we mean the domains traditionally taught first in linguistic introductions, viz. phonetics, phonology, morphology, syntax, semantics, and pragmatics. We do not mean, however, that these domains are treated in a traditional fashion in this volume; rather, all chapters deviate from the research prototype in these fields in one or several respects. Siebenhaar and Leemann attend to methodological reflections on the phonetics–phonology interface in the domain of intonation. Can phonetics clearly be delimited from phonology? Siebenhaar and Leemann corroborate their line of argument with examples retrieved from a corpus of natural Swiss German speech. Schmid, in a similar vein, discusses phonetic and phonological approaches to speech rhythm in Italo-Romance dialects. Morphology is covered in a contribution by Wälchli, entitled *Indirect measurement in morphological typology*. Wälchli critically assesses the extent to which indirect methods – as frequently applied in the natural sciences – could be useful in morphological studies. Next, Bucheli Berger, Glaser, and Seiler address conceptual and practical aspects of examining syntactic structures in the context of dialect geographical research. Van der Auwera and Diewald survey methods that are currently used in the study of modality, such as conceptual analysis, typology, and monolingual and parallel

corpus linguistics. The first section concludes with a contribution by Ender and Wälchli, who assess the creation of making a festschrift and shed light on this process from the perspective of Iwar Werlen's definition of the ritual as an expressive institutionalized action or sequence of actions (Werlen 1984: 81).

Section two of this volume includes contributions collected under the guise of *Cross-Linguistic and Language-Internal Diversity*. The articles tap into typology, multilingualism, koineisation, and second language acquisition. Zúñiga addresses the relationship between language documentation and linguistic typology. Berthele explains the epistemological and methodological debates in multilingual research designs. Reflections on methods in dialect contact research, e.g. in the context of linguistic accommodation or second dialect acquisition, is addressed in Britain's contribution. Ender addresses the question of how second language learners deal with variation in their everyday input by highlighting some of the methodological challenges that emerge in this new line of research. Finally, von Waldenfels rounds off this second section with a discussion and illustration of methodological benefits and pitfalls of research based on parallel corpora; at the same time, he compares these aspects with the usefulness and drawbacks of translated language.

Section three, entitled *Dynamic Language*, goes beyond classic sociolinguistic areas of research and proceeds with methodologies applied in historical linguistics as well as in psycholinguistics. However, we do not claim that only these approaches to linguistics are dynamic. Many other papers in this volume reflect various aspects of dynamicity in linguistics. This section embraces dynamic language both in a diachronic and in a procedural performance perspective. Busse's *Historical text analysis: Underlying parameters and methodological procedures* introduces historical aspects of corpus linguistics while focussing on methodological and interpretative issues. Writing from a historical linguists' point of view, Bielmeier evaluates the traditional historical-comparative method and examines how it can be successfully applied beyond Indo-European languages to varieties of Tibetan, usually referred to as "Tibetan dialects". The next contribution in this section is van Driem's *Etyma, shouldered adzes and molecular variants*, which reflects on the usefulness of an interdisciplinary approach towards historical linguistic reconstruction. Vorweg, finally, evaluates experimental approaches and the experiment itself towards the examination of language processing.

The fourth section carries the title *Writing* and includes two rather different contributions. Perrin addresses media discourse, where news items are generated, from a production perspective. More specifically, he dis-

cusses the application of Dynamic Systems Theory to the field of news-writing. By the same token, Boyes Braem discusses methodological issues encountered by signed language linguists which arise due to production and perception differences in visual/corporal modality of spoken and signed languages.

The final, fifth, section incorporates topics that revolve around *Language, Space and Society*. De Stefani proposes an interactional approach towards studying place names, by observing how they are used in naturally occurring conversations, thus connecting traditional onomastics with interaction studies. Grünert analyses the applicability of the territoriality principle on the example of the smallest of the four national languages of Switzerland, Romansh, placing the discussion in a legal context, thus relating linguistics and law. The volume concludes with a contribution by Lüdi, Höchle, and Yanaprasart, who address the status and use of English in Switzerland, with a particular focus on workplace communication. Methodologically, this contribution combines different approaches to the investigation of the use of English in Switzerland and collects attitudes towards its use.

All these contributions place emphasis on methodology as an integral part of any innovative research in contemporary linguistics. As each paper is embedded in concrete linguistic research questions, the volume as a whole follows a bottom-up approach to methods and their status in contemporary linguistics. The collection of articles illustrates the diversity in the study of language in linguistic sub-disciplines and thereby strives to promote a more global understanding of linguistic investigation.

Notes

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2. We are grateful to Toon van Hal and Johan van der Auwera for having pointed out the history of the saying to us.

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Part I: Core domains: From phonetics to pragmatics

Methodological reflections on the phonetic–phonological continuum, illustrated on the prosody of Swiss German dialects

Beat Siebenhaar and Adrian Leemann

1. Introduction

Since Trubetzkoy (1939) we discriminate between phonetics and phonology, where phonology categorically interprets language-specific continuous acoustic signals and thereby conceptually separates between a component of meaning and the stream of speech, which both are correlated in a second step. Today, the allegedly obvious separation is being questioned on a number of levels. This softening of what used to be formerly rigid boundaries between phonetics and phonology is particularly prevalent in a description of prosody (cf. Byrd and Choi 2010: 32).

In the context of intonation research, this uneasy connection between phonetics and phonology is hinted at in Bolinger (1972). He notes that the phonetic representation of intonation, for instance, cannot simply be determined by considering grammatical, phonological, aspects of sentences, as illustrated in the infamous “Accent is predictable (if you’re a mindreader)” *Language* article. What Bolinger is referring to is the then becoming dominant school of thought of metrical phonology, where prominence is understood as an abstract feature that can be derived from the metrical strength of syllables (Lieberman and Prince 1977). This framework was adopted by Pierrehumbert (1980) who formulates an autosegmental-metrical approach towards intonation, where key syllables in utterances are described as discrete tones. This system has been formalized in the ToBI transcription system. The underlying assumption is that the temporal coordination of fundamental frequency and phonetic segments is highly rule-governed, where the highs and lows of the fundamental frequency (f_0) contour predictably line up with metrically strong syllables (Pierrehumbert 1980). Yet, there are studies that insinuate otherwise. Kochanski et al. (2005) as well as Silipo and Greenberg (2000) re-address the role of stress, i.e. metrically strong syllables, in predicting f_0 by analyzing a corpus of spontaneous speech in British and American English. The studies conclude that metrically strong

syllables are exceptionally marked with loudness, duration, and distinct spectral tilt – not necessarily *f0* movements.

Over the past three decades, temporal aspects, too, aroused the curiosity of linguistic research. With the greater part of actual research we analyze durations of segments within the acoustic signal; an alternative access – articulatory phonology (Browman and Goldstein 1992) – observes gestures of the articulatory tract. The distinction of long and short (and over-long, where they exist) vowels and consonants was discovered long before linguistics as subject proper was established. This phonological distinction is thus reflected in the orthography of languages which feature quantity distinction. The phonetic gradual change of duration only became evident with acoustic measurements based on visualization of speech. The phonetic lengthening and shortening processes were mainly focused with the interest on the technological representation of speech in speech synthesis and speech recognition systems. As is the case with intonation, the marking of stress, accents, and phrase boundaries is particularly interesting. The appreciation of these concepts is to a large extent dependent on the phonological system of the language in question, which is assumed to be categorical, while the phonetics of an utterance are conceived of as being gradient. The argumentation is similar for intonation and timing: Continuous changes of fundamental frequency are – in the actually most respected theory – categorized into high and low tones, which are tied to accented syllables and phrase boundaries, followed by an unspecified interpolation that subsequently applies. The same holds for timing, where gradient changes of segment durations are categorized as short and long (and where they exist over-long) sounds, and also applies to accents and phrase boundaries. The other way around, the categorical phrase boundaries and accents are represented in continuous duration changes. The relation between these gradient changes in *f0* and duration and the underlying phonological categories is still unclear. Yet, to this day, it is not entirely straightforward, how these phonological categories are represented in prosody. Both, phonetic and phonological research converge in the typological discussion of rhythm of languages (Ramus et al. 1999, Low et al. 2000).

These considerations suggest that there is more to describing and understanding *f0* and temporal patterns than considering categorical, metrical, i.e. phonological, aspects of sentences. By means of examples of the Bernese “Quantitative Approaches to Geolinguistics of Swiss German Prosody” corpus, we illustrate the problematic interplay between phonetics and phonology in the context of prosody. After overviewing key concepts of proso-

dy and a short description of the data, we will show that creating a corpus of spontaneous speech already brings with it many decisions located at the boundaries of phonetics and phonology. In the second part, which addresses temporal aspects of prosody, the phonological classification of long and short vowels as well as the phonetic correlate of phrase boundaries are put into question. In a third part, evidence is presented which underlines the detachment of stress from *f0* movements. Thereby, the central phonological and ultimately methodological assumption that underlying stress patterns predict *f0* movements is put into question. A phonetic intonation model, which allows one to bypass this assumption of *f0* prediction, the Fujisaki, or Command-Response model (Fujisaki and Hirose 1982) model, is presented and its application on the current set of data is illustrated.

2. Key concepts

Before jumping into the relevant topics at hand, key concepts of intonation research, prominence, stress, and the modeling of intonation are touched upon so as to lay the theoretical groundwork for the subsequent presentation of Swiss German intonational and temporal data and the discussion thereof.

2.1. Prominence

Prominence on the word level frequently denotes word accent or lexical accent. The acoustic correlates of prominence are intricate and seem to be language-dependent, and most importantly, it is sensible to differentiate between production and perception: In prominence production, the most critical indicator for varieties of English, for instance, is duration, followed by intensity and, least importantly *f0*. In prominence perception, however, *f0* occupies a more critical role (see Kochanski et al. 2005). Not all languages mark prominence concurrently with the above-mentioned parameters in prominence production. French, for example, shows reduced correlation of these parameters. Vaissière (1983: 66) even claims that

it is possible that specific interrelations between the three suprasegmental features (*f0*, duration, and intensity) [...] are the most salient characteristics differentiating between languages, dialects and individual ways of speaking. If this is true, most of the existing descriptions of prosodic systems [...] are

incomplete, since they describe only one parameter at the time. (Vaisière 1983: 66)

As will be shown below, it seems that particularly the Alpine dialects under scrutiny exhibit a somewhat different suprasegmental code as opposed to Midland dialects.

2.2. Stress

Stress is a highly intangible prosodic feature (Lehiste 1970: 106). Stress and accent are often used interchangeably, which adds to the terminological confusion. Stress is governed by the lexicon of a language (as in English or German) or by rules (as Finnish where stress is always on the first syllable) and is marked by prominence. Syllables that carry stress are perceived as more salient. Stress is assigned according to strong and weak syllables, a notion that grew out of metrical phonology (see Liberman and Prince 1977). In this framework, prominence is understood as an abstract feature, which derives from the metrical strength of syllables, consequently, the interconnectedness between stress and prominence. However, prominence is not necessarily lexical stress but it can also be associated with boundary marking.

2.3. Modeling prosody

Intonation models can generally be categorized into more concrete or more abstract approaches (cf. Cutler and Ladd 1983: 2ff.). The former category is frequently referred to as phonetic models, the latter as phonological models of intonation. The two approaches differ vastly with regard to the degree of abstractness postulated of the prosodic representation.

The abstract take towards intonation analyzes the prosodic structure and its relation to phonology and other aspects of grammar so as to generate an inventory of abstract categories, eventually creating a formalization of intonational function and form. By the formulation of rules, the phonological, symbolic approach transposes the abstract phonological description of intonation contours into its concrete phonetic form. Basically, *f0* contours are understood as the addition of atomistic local events: pitch accents on the one hand, and boundary tones on the other (cf. Pierrehumbert 1980). Most importantly for the present paper, much of the work in intonational phonology implicitly presupposes that prominence is first and foremost a function of *f0*. Ladd (2006: 48–49), for example, states that

A pitch accent may be defined as a local feature of a pitch contour – usually, but not invariably a *pitch change*, and often involving a local minimum or maximum – which signals that the syllable with which it is associated is *prominent* in the utterance. [...] If a word is prominent in a sentence, this prominence is realized as a pitch accent on the “stressed” syllable of the word (Ladd 2006: 48–49).

On corpora of different varieties of English, Kochanski et al. (2005), Silipo and Greenberg (2000), demonstrate that many prominent syllables do display high pitch, yet, many non-prominent syllables follow the same pattern. They conclude that “prominence and pitch movements should be treated as largely independent and equally important variables” (Kochanski et al. 2005: 1052).

In the phonetic approach, claims are made about the concrete, close-to-the-signal phonetic form of intonation. Intonation is understood as the addition of multiple components, consisting of baselines, globally declining phrase components, and local word accents (cf. Öhman 1968, Fujisaki and Hirose 1982). It is the realization of intonation that represents the primary scientific goal. *f0* contours can be modeled blindly, i.e. without, in a first step, taking into account whether *f0* contours are anchored with stressed syllables or not. In a second step, *f0* excursions can be associated with the segmental level. This procedure allows one to deduce the effect of metrical stress on actual *f0* movements.

Timing, on the other hand, has received less attention in prosodic research, except for the quantity opposition on the segmental level, because it is not as functionally loaded as *f0* and it is often regarded as a corollary of *f0*. Therefore, the modeling of segment duration is normally rule-based and more often than not explored in the context of data-driven statistical models for speech-synthesis-systems. In these models, duration changes are usually derived from phonological components such as stress, accent, phrase boundaries, as well as the surrounding segments and the position of the segments within larger entities (foot, word, phrase). Moreover, speaking style, focus and speech rate, which are out of the scope of phonology, are integrated into these models (cf. Klatt 1976, Siebenhaar et al. 2001, van Santen 1998). In many instances, these temporal aspects are directly linked to intonation; yet, as mentioned above, prominence can be marked without *f0*-changes. Nevertheless, there are no genuine linguistic models for timing that function independent of intonation. In this sense, analyzing temporal aspects of spontaneous speech is by itself a methodological approach on prosody that goes beyond the actual intonation-only analyses. Moreover, respecting time as a linguistic phenomenon – articulating a linguistic unit is

intrinsically temporal – opens a view on linguistics, which are not only based on a graphic symbolization of language.

3. Data

The goal of the empirical study was to find prosodic differences between four Swiss German dialects, where the term dialect is used in the German sense of a geographically defined variety. It is only since the end of the twentieth century, that the focus of research in prosody moves from standard languages to regional and dialectal variation. That shift towards dialectal speech implies a revision of the empirical basis from laboratory, word or phrase list data, to data that is based on spontaneous, natural speech (cf. Bucheli Berger, Glaser, and Seiler, present volume, for a syntactic description of natural speech Swiss German dialects, and Schmid, present volume, for a rhythmic description of Italian dialects). The focus of our analyses lies on an acoustic description, i.e. on a phonetic analysis, of these four dialects. Results of these analyses are published in Leemann (2012), Leemann and Siebenhaar (2007, 2008a, 2008b, 2010). In the present contribution, the center of interest lies not on the data analysis per se; instead, the data are used to illustrate the practical and theoretical problems at the interface between phonetics and phonology.

The data consist of approximately two hours of spontaneous speech. Forty subjects aged twenty from four different dialect regions of German-speaking Switzerland were interviewed. All four dialects belong to the Alemannic dialect family. Speakers (5 females and 5 males per dialect) from two Alpine varieties, Valais (VS) and Grisons (GR), and two Midland dialects, Bern (BE) and Zurich (ZH) were recorded in spontaneous interviews. Approximately three minutes per speaker were manually labeled on a segmental and syllabic level and analyzed for temporal aspects. *f0* contours were explored using the Fujisaki intonation model.

4. Phonetics and phonology in data preparation

In the first steps of data preparation, it becomes obvious that phonetics and phonology can hardly be separated and are co-dependent. This intimate link between phonetics and phonology affects the decision-making process of

an empirical study that aims to explore prosodic differences between dialects – this aspect shall be discussed in this section.

For the analysis of the prosodic aspects, segments of the interviews had to be isolated and labeled. This labeling itself requires decisions on behalf of the labelers which are guided by phonetic and phonological considerations. Even the prosodic level, which in fact represents the dependent variable to be investigated, influences the decisions. To begin with, the basic segments that are to be analyzed had to be decided on. Most linguistic analyses on prosody focusing on intonation choose the syllable as basic unit. However, whether onset, nucleus and coda are equally affected by stress or speech rate changes seems to be language dependent (Barry et al. 2007). Moreover, while the nucleus is more or less unambiguously defined in phonetics as the most sonorant or most articulatorily open gesture between two less sonorant or more closer parts, the definition of the syllable in phonology seems to be an issue of much more controversy. In German, for instance, consonant clusters and schwa deletion characterize the discussion if there are syllabic consonants or if consonants have to be described as extrasyllabic. This is especially relevant if one considers the south German schwa deletion in prefixes (*Gschpängscht* < *Gespenst* ‘ghost’). Considering this background, we opt for a segmentation level narrower than the syllable. This level is closer to the phone/phoneme as the basic prosodic unit. The syllable is a derived category based on the sonority hierarchy. For the analysis of *f0*, however, the syllable was chosen as the appropriate unit. The syllable represents the structural anchor point for abstract prosodic features, such as tone or stress, for example.

The segmentation follows a top-down approach, from utterance to phrase and phone, and bottom-up from phones to utterances. The practically justified combination of the two approaches allows for a distinction in ambiguous cases. However, in spontaneous speech, only the definition of “utterance” is not problematic itself, while the definitions of the other units are questionable. The utterance is a speech unit that is pragmatically separated by the question of the interviewer on the left and by the end of the sound chain on the right, the latter of which is generally given by the speaker himself/herself, as the interviewers usually did not intervene. The segmentation of the utterance into phrases poses a greater problem, as the definition of “phrase” can be grounded in grammatical, semantic, pragmatic and prosodic features. With many discontinuities and hesitations, spontaneous speech often disregards syntactical shapeliness (cf. Bucheli Berger, Glaser, and Seiler, present volume), so that pragmatic (conversational) and

semantic aspects of sense units are attributed greater significance. As prosody represents the focus of the current study, prosodic features attributed to phrase boundaries such as pitch changes, final lengthening, pauses and changes of voice quality (Cruttenden 1997) should ideally not affect the decision. However, given the interrelation of the afore-mentioned aspects, the decision as to where to place the phrase boundary is more often than not opaque. None of the mentioned criteria are separately unambiguous, but the interplay between them provides an inter-individually comprehensible decision on where to set a phrase boundary: In the recording of interactive spontaneous speech, perception is where all aspects meet (cf. Gilles 2005: 42–45). Thus, the decision as to where a phrase boundary is labeled is ultimately a pragmatic decision of the investigator based on perception, whether a sense unit was terminated, whether a grammatical unit was terminated, whether the interviewer intervened and so forth. To some extent, the decisions were cross-checked with the project members.

The labeling of the segments is tedious as well. To begin with, it is difficult to say if the labeling is a phonetic or a phonological procedure: In order to define the duration of a sound, the sound must be brought in relation with an independent dimension. This dimension can be the canonical phonological representation. The systematic reductions of spontaneous speech, however, strongly obscure a canonical representation. Let us exemplify this with a word that is often used on different levels of reduction. The full form of *eigentlich* ‘actually’ in Bern is [ˈɛi̯gəlɪx], with a variant closer to the standard German [ˈɛi̯gətɪx]. *Eigentlich* is often used as a discourse particle, which is subject to, sometimes quite rigorous, reductions. In this use, the first step of reduction is the loss of the accent [ɛi̯gəlɪx]. Centralization of the unstressed [ɪ] follows: [ɛi̯gəlɪx]. In a next step, the central schwa is syncopated: [ɛi̯gəlɪx]; the [l] disappears [ɛi̯gəlɪx], the schwa of the last syllable is syncopated: [ɛi̯gəlɪx], the complex coda is reduced to a simple fricative [ɛɪx], the diphthong is monophthongized [ɛx] and finally reduced to a schwa [əx]. These reductions are critical complications for the transcription process but even more so, they exacerbate a systematic segmentation of the signal. While the transcription suggests a stepwise reduction, the acoustic signal shows a gradual reduction of the duration and quality of the individual sounds due to the gestural reduction. Thus, labeling, which is based on acoustic features, has to set clear-cut boundaries in the continuum, where one sound can be shadowed by another. It must be emphasized at this point that a highly precise labeling is crucial for the temporal analysis. The calculation of the mean duration of a sound class relies entirely on the labeling

thereof. Let us go back to *eigentlich*, which, too, illustrates this problem. In order to calculate the mean duration of schwa, the question poses itself as to which form, which schwas, need to be included. Is it only the schwa of the medial syllable in the full form [ˈɛɪ̯ɡ̊ət̪lɪx / ˈɛɪ̯ɡ̊ət̪lɪx] or also the schwa resulting from the reduction of the unstressed [ɪ] in the form [ɛɪ̯ɡ̊ələx] or can it also be the schwa of the fully reduced form [əx]? In our project, we decided to take into account all forms; hence all the mentioned reduction forms are accepted as forms of the lexicon. However, the reductions are marked, so that in a second analysis, one could return to the original forms and consider the reductions separately.

As the definition of phonemes is to a great extent based on word phonology, only the schwas in the full form are regarded as schwa-phonemes. The other schwas result from regular phonological processes and therefore do not represent phonemes proper. From a prosodic point of view, all the schwas in the systematic reduction forms can be regarded as representations of the other (full) phonemes from which the concrete realizations can be measured.

The discussion of the problems in data preparation, exemplified with defining phrase boundaries and transcription, shows that the boundary between decisions based on phonetics and decisions based phonology cannot be drawn strictly. The border proves to be rather a continuum where methodological reflections in the perspective of the goal of a specific project have a great impact on the concrete decisions. Furthermore, it is confirmed once again that, on the one hand, the phonetic continuum can hardly be transferred to a phonological classification and, on the other, that a classification of data of spontaneous speech is hardly possible on a purely phonetic ground.

5. Temporal aspects

5.1. Duration of schwa

One of the central questions that follows from the previous example is whether the phonetic realizations of the schwa phoneme in the narrower sense and the schwas in the broader sense – including reduced variants – behave differently in the timing domain. It turns out that for three of the four dialects, schwas resulting from vowel reductions are shorter than schwas representing phonological schwas in the former, narrower sense.

For the VS dialect, however, schwa phonemes and schwas resulting from reductions are of the same duration. From this we conclude that the four dialects under scrutiny exhibit different strategies of reduction, one that keeps vowel duration more constant (VS) while the others show more variable vowel duration (BE, ZH, GR).

5.2. Stress and focus

As is the case for standard German, Swiss German dialects show lexical stress too. In our data, stress and narrow focus is marked. Narrow focus was marked according to aspects of givenness of information, contrasting information, as well as emphasizing information during the course of the interview. With only few exceptions, there are only stressed syllables that are focused. For all dialects, vowels in focused syllables are significantly longer than those in non-focused but word-stressed syllables, which are again significantly longer than those in unstressed syllables and schwas. The same can be said of consonants; yet, these differences are not always significant. In the context of timing, pragmatic focus and the phonological stressed–unstressed dimension are well reflected in phonetic duration differences. As it has been shown for the schwa reductions, the difference between focused, stressed and unstressed segments is more distinct in BE, GR, ZH than in VS.

5.3. Quantity and phrase final lengthening

The German phoneme system distinguishes short and long vowels. Yet, except for /a~a:/ and /ɛ~ɛ:/ the quantity contrast entails an opposition of tenseness. Therefore, some grammars (e.g. Duden 2005: 26) abandon the opposition in quantity in favor of an opposition in tenseness (/a~a/ and /ɛ~ɛ/). In contrast to standard German, most Swiss German dialects (and all four dialects discussed here) demonstrate a quantitative distinction of long and short vowels while vowel quality remains the same (*gi: gələ* : *gigələ* ‘to play the violin : to giggle’, *βe:t* : *βet* ‘flower bed : bed’). Swiss German dialects also have a quantity distinction of obstruents (*vaḏə* : *vata* ‘calf : cotton wool’; cf. Fleischer and Schmid 2006 for the Zurich dialect). Willi (1996) has shown that the opposition between fortis and lenis plosives in Zurich German is not a distinction achieved through voicing but through consonantal duration. This distinction in duration is also substantiated for the Thurgovian dialect by Kraehenmann (2003), who conceives of the long

and short obstruents terminologically as singletons and geminates. From this we assume, that the distinction of long and short segments should be preserved in all phrase positions. Short segments may not be lengthened, or long segments shortened, so much as to cause perceptual ambiguity at the segmental level. Looking at the long and short vowels in our data, the claim that long and short vowels are always distinct cannot be maintained fully. Phrase-final lengthening affects vowel duration to such an extent, that short vowels in phrase-final syllables exhibit the same length as long vowels in phrase-medial syllables. Figure 1 shows the typical distinction of long and short vowels in phrase-medial and phrase-final syllables, here in the VS data, which are representative of all dialect groups except for the non-accented vowels in GR. The first and penultimate syllables are not taken into account because they show an intermediate duration. Figure 1 indicates that short vowels are on average shorter than long vowels. Yet, the short vowels of the ultimate syllables (u) of a phrase show the same length as the long vowels in phrase-medial syllables (m). From this we conclude that final lengthening, a prosodic feature of phrasing, affects vowel quantity in such a way that the segmental, phonological distinction is no longer maintained over the different position. When we compare the left and the right figure, it is apparent that short vowels are lengthened if they do bear lexical stress. Long vowels are much less affected by stress; stressed and unstressed long vowels are not significantly different. Yet in all four dialects, phrase-final lengthening affects unstressed syllables more than stressed syllables, as they are as long or even longer than the stressed syllables in the same position. Moreover, the figure indicates a high variation that for stressed syllables 8.7% of all mid phrasal short vowels are longer than the mean duration of the mid phrasal long vowels, and more than 4.1% of the long mid phrase vowels are shorter than the mean of the mid phrasal short vowels. The numbers remain at the same level if one only considers long /a:/ and short /a/, which eliminates inter-vowel distinctions.

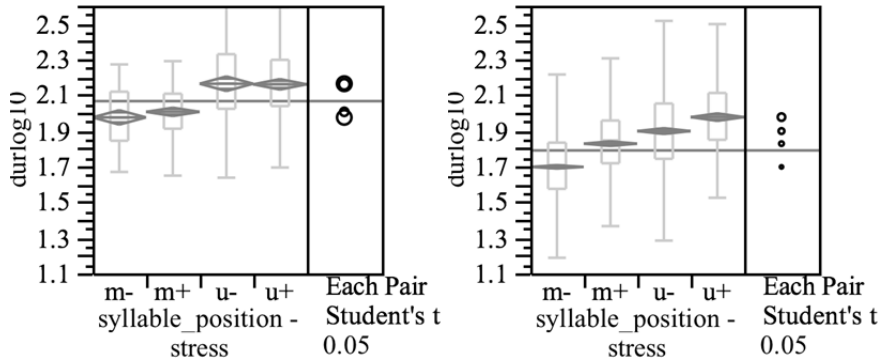


Figure 1. Box plot of duration and confidence intervals of long vowels (left) and short vowels (right) in phrase-medial (m) and ultimate (u) position, stressed (+) and unstressed (-). The overlapping circles on the right of the figure show that the difference of stressed and unstressed long vowels is not significant.

5.4. Degree and extent of phrase final lengthening

Phrase-final lengthening has been documented in many studies covering numerous languages but the degree and extent of lengthening varies between languages (cf. Fletcher 2010: 540). Our project shows that the degree and extent of phrase-final lengthening even varies within the selected Alemannic dialect group. Figure 2 shows the duration of schwas that are phonologically represented as such in different positions in the phrase for the ZH and the VS dialect. If we compare only schwas, there is no interference from different vowel qualities, quantities, and stress and we can analyze the 'pure' influence of the position of a syllable in a phrase on the duration of the vowel. The figures reveal that phrase-final lengthening is much more distinct in ZH than in VS. On the one hand, the lengthening is more prominent in phrase-final syllables, on the other hand, its effect on penultimate syllables is clearly evident. Moreover, phrase boundaries are also marked with a phrase-initial lengthening in ZH, while this is not the case for VS. The two other dialects (BE and GR) behave along the lines of the ZH dialect.

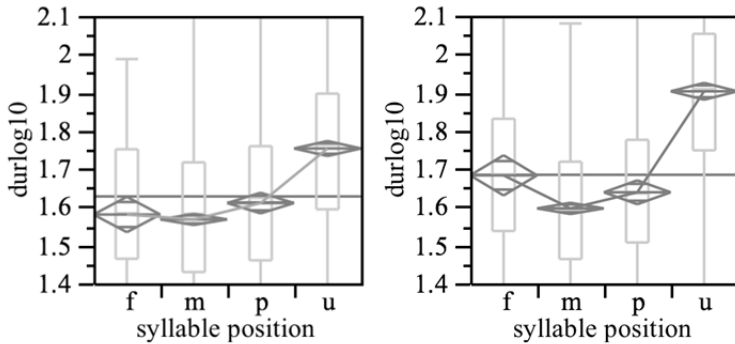


Figure 2. Box plot of duration and confidence intervals of phonological schwas in first (f), medial (m), penultimate (p) and ultimate (u) syllables of phrases in the ZH dialect (left) and the VS dialect (right).

Despite the different characteristics of phrase-final lengthening (and the additional phrase-initial lengthening), the connection between temporal changes and perceptual structuring of utterances is clearly visible for both dialects. A phonological interpretation of the phonetic continuum seems thus appropriate. It should be noted, though, that the statistical dispersion in each position is very high, which points to the fact that the duration of an individual sound cannot unambiguously be interpreted and connected to a certain position of the syllable in the phrase. Even in the ZH variant, where we encounter a very distinct phrase final-lengthening, 8% of all schwas in mid-phase position are longer than the mean of the schwas in phrase-final position; in return, 8% of all schwas in phrase-final position are shorter than the mean of the mid-phase schwas. For VS, this value even amounts to 20%.

6. Intonation

6.1. Methods

The methodological framework chosen to analyze f_0 contours in the present contribution is somewhat unorthodox. We do not follow the dominant autosegmental phonology methodology (Goldsmith 1976, Liberman and Prince 1977) and the derived transcription system therefrom, i.e. ToBI (Pierrehumbert 1980). Given the distinct dialectal diversity of German-speaking Switzerland, it is considered appropriate to apply a model that has the ability to detect phonetic details with great specificity. These objective

measures can then serve as the basis for phonological interpretations. Further methodological concerns as to the reasons for opting for a phonetic intonation model will be illustrated in Section 7. Intonation contours are therefore explored using the Fujisaki, i.e. the Command-Response model.

The Command-Response Model is hierarchically structured and formulated as a linear model. As input signals, the model receives phrase commands (PCs) in the form of impulse functions and accent commands (ACs) in the form of rectangular functions. The output signals of the two mechanisms are added onto the smallest asymptotic value (F_b) of the f_0 contour to be generated. For analysis purposes, the model decomposes the f_0 contour into a set of components from which timing and frequency information can be estimated. The PC can be applied for a description of the global declination tendency of f_0 . The AC is understood as a device for marking segments more f_0 -prominent on the local level. f_0 contours in our data were analyzed by means of Mixdorff's FujiParaEditor (2012). The f_0 behavior in each of the afore-mentioned variables was analyzed using parametric and non-parametric statistical tests against the background of detecting dialect-specific as well as cross-dialectal differences. Dialect-specific multiple linear regression models were generated, which allow for a distillation of the relative contribution of independent variables towards explaining f_0 variability in a given parameter in a specific dialect.

In the subsequent presentation of the results, a particular focus will be placed on how the variable stress does – or does not – affect f_0 behavior. This variable deserves particular attention since, as mentioned and criticized earlier, the methodological framework of intonational phonology implicitly assumes that f_0 modulations occur on or in the vicinity of stressed syllables.

6.2. Distribution of stressed syllables in accent commands

Most ACs contain only one syllable with lexical stress. 15% of all ACs incorporate two or more stressed syllables. Interestingly, however, more than a third of all accents do not contain any stressed syllables at all. This finding is congruent with the insights put forth by Kochanski et al. (2005) and Silipo and Greenberg (2000). A great number of unstressed syllables in their corpus of spontaneous speech are marked with distinct f_0 movements. This finding corroborates the meaningfulness of treating f_0 and stress as separate variables.

Secondly, this result may further serve as evidence of what is frequently found in the literature on both Swiss German (see Hegetschweiler 1978: 24) as well as Swiss High German intonation (Ulbrich 2005: 320): Swiss German default accents often demonstrate a low f_0 in an otherwise stressed syllable, and a high f_0 in subsequent, otherwise unstressed syllables. This delay in pitch movement with regard to stress has been observed particularly for the Alpine varieties. In the ToBI framework, such accents can be labeled as L*+ H (cf. Fitzpatrick-Cole 1999).

6.3. Amplitude of stressed syllables in accent commands

Overall, we find the highest amplitudes in ACs that contain one or more stressed syllables. If the AC does not contain any stressed syllables, it is generally lower in amplitude. This finding underlines the phenomenon that, in the stream of speech, metrical stress can cause higher f_0 excursions, and is congruent with the vast amount of literature on acoustic correlates of stress in German (see for example Isačenko and Schädlich 1966). If we take into consideration the findings put forth at 6.2, we can conclude that even though f_0 excursions may be caused by stressed syllables, this needs not necessarily be the case. What seems to be happening, however, is that f_0 excursions that are caused by stressed syllables are higher in amplitude than f_0 excursions for ACs without stress. In other words, metrical stress does not have to be accompanied by local f_0 movements (accent commands), but if it is, stress seems to cause distinctly higher AC amplitudes.

All dialects exhibit roughly the same proportions of ACs with 0 stressed syllables, yet, we find that the differences in amplitude between ACs with 0 stress and ACs with 1 or more stressed syllables are more distinct for the Midland varieties than the Alpine varieties. We find a striking North-South divide with the Alpine varieties showing similar amplitudes for all AC types, regardless of whether the AC contains no or several stressed syllables. This ties in with Wipf's (1910: 22) observation on VS Swiss German that unstressed syllables can also carry higher tones, as well as Meinherz' (1920: 38ff.) remark that weak syllables in the Grison dialect often carry higher pitch accent than highly dynamic ones. In comparison, we observe a distinct difference between no stress ACs (low amplitude ACs) and ACs with one or more stressed syllables (much higher amplitudes) for the Midland varieties. Put differently, the contribution of metrical stress to AC amplitude seems to occupy a more critical role in the Midland varieties, particularly in the BE variety.

6.4. Effect of stress in multiple linear regression models

The most striking differences between the Alpine and Midland groups are found in the relative weight of the *linguistic* predictors in the *AC amplitude* models, including the predictor *stress*. Figure 3 shows the radar charts illustrating the multiple linear regressions (MLRs) calculated on each dialects' speakers' AC amplitudes.

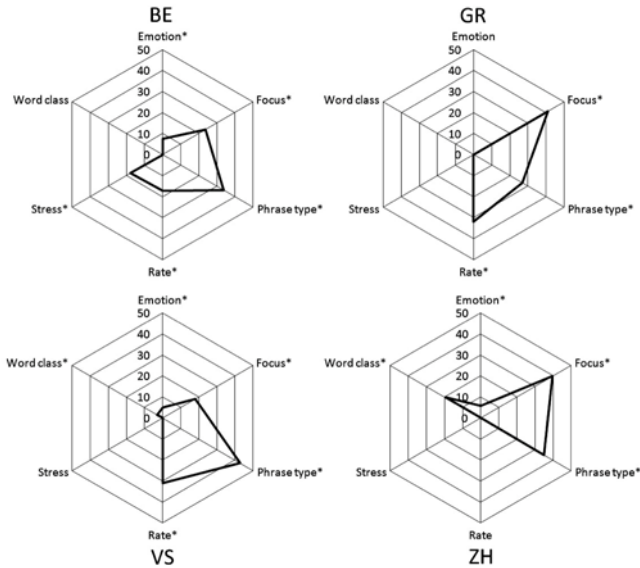


Figure 3. Radar chart illustration of MLR of AC amplitudes for all four dialects (From: Leemann 2012. Reprinted with kind permission from John Benjamins Publishing Company, Amsterdam/Philadelphia).

The variables taken into consideration in this MLR are emotion (5 levels – neutral, bored, angry, happy, sad), focus (2 levels – no focus / focus), phrase type (3 levels – continuing, terminating, question), articulation rate (speaker specific in syllables / second), stress (2 levels – stress / no stress), and word class (2 levels – lexical / grammatical). The MLRs in Figure 3 points to the fact that stress, as a linguistic predictor, bears little power in *f0* movement prediction in all dialects, except for the BE dialect (adjusted $R^2 = .13$; $F(14, 2537) = 29$, $p < .0001$). In the ZH dialect, *stress* proves to be a highly significant predictor in bivariate tests; in the generated models, however, stress just fell short of reaching significant levels.

An explanation as to the GR speakers' low sensitivity to lexical stress may lie in the GR speakers' contact with Romansh and Italian, two Romance languages also spoken in the canton of GR. Italian shows penultimate and antepenultimate stress and exhibits right-headed rhythmic groups frequently featuring low-high f_0 movements (see Hirst and Di Cristo 1998: 24, Rossi 1998: 220). Romansh, too, exhibits lexical accents in word-final or penultimate position (see Cavigelli 1969). Since in most Germanic languages, feet are left-headed, while Italian and Romansh are right-headed, one may speculate that the Grisons dialect can be regarded as a mix-version of these two stress systems. Note, also, that Grisons varieties frequently feature the archaic feature of non-reduced word-final syllables, which may too, add to distinct f_0 modulations in unstressed syllables. One may conclude from this is that if the Grisons, over centuries, alternatively incorporated both rhythmic group patterns, it could be hypothesized that stress will eventually lose importance, since stress is no longer perceived as discrete. Therefore, we hypothesize that the generally devalued variable stress in the Grisons dialect is likely to have little effect on the variance of f_0 contours.

As for the VS speakers' low sensitivity towards stress, illustrated in Figure 3, the same arguments as put forth for the GR's low sensitivity towards stress may apply. French (and Franco-Provençal), with which the VS speakers are in contact in the West, is a language in which the prominence markers *loudness*, *duration*, and *fundamental frequency* are correlated only little. These prominence marking parameters are set according to the first and the last syllable of the word: the first syllable normally shows a rise in f_0 , while the word-final syllable may exhibit a variety of prominence contrasts, frequently, however, a rise in f_0 (see Welby 2006). The exposition of the Valais dialect to the prominence systems of French may over centuries have led to an interesting mix. This language contact may have contributed to complex and somewhat unpredictable f_0 variability that Wipf (1910) alludes to. In addition, Valais varieties, too, commonly feature the archaic feature of non-reduced word-final syllables. These may too contribute to distinct f_0 modulations in unstressed syllables.

We can conjure alternate interpretations concerning the distinct difference between Alpine and Midland dialect behavior. Exploring language and migration history may provide one way of tapping into these differences. Given the mountainous terrain, Alpine varieties may have served as linguistic refuges over the past centuries and - in that sense - may represent what Johanna Nichols (1993) refers to as residual zones. Here, the highest Alemannic varieties were preserved, retaining what are now described as

archaic features. On a segmental level, these differences can be reconstructed in part (Wiesinger 1983: 829, Hotzenköcherle 1984). However, a historical reconstruction of prosodic – particularly intonational – features is an impossible endeavor given the apparent lack of audio data from past centuries.

7. Discussion

During the prosodic analysis of spontaneous speech, one faces many challenges that cannot be solved on phonetic or phonological grounds alone, because phonetics and phonology are closely interrelated. The transcription as well as the segmentation processes themselves do not allow for an analysis of purely phonological entities – since we are given only a purely phonetic realization in the signal of which a phonological representation has to be abstracted. This basic phonetic realization contains reductions of sounds, coarticulation, allegro forms, language change and linguistic variation. It is these phenomena which do not allow for a uniform phonological representation of words, of sounds, and of phrases. Phonetic considerations, perception, semantics and syntax intervene when it comes to defining the basic units of the analysis. Even prosody itself cannot be excluded in defining phrase boundaries, for example, and if we do include prosodic cues in our definition of phrase boundaries, it is not clear if there is a phonological or a phonetic view on it. The dichotomous view on phonetics and on prosody is fuzzy, to say the least. Decisions in data preparation are therefore methodologically highly relevant and, accordingly, must be stated very clearly.

Evidence from a large corpus of Swiss German dialectal speech underlines the detachment of phonologically defined stress from phonetic parameters as segment duration and intonation – which is particularly true in the context of spontaneous speech. In the temporal domain the phonological distinction of stressed and unstressed syllables is at least partially reflected in phonetic duration, albeit with a great variance, so that a direct link of stress and duration cannot be made, especially because the position in the phrase – beside others not mentioned here (cf. van Santen 1998) – affects segment duration and interferes with stress. However, phonologically short segments are lengthened by stress while phonologically long vowels show little or no effect of stress on duration.

Results from the present study highlighted the benefits of conceiving of intonation as a matter of degree rather than a binary feature. In the au-

to segmental framework it is not the aim to capture continuous *f0*-movements that signal prominence. It is not clear whether ToBI (Silverman et al. 1992, Grice and Baumann 2002 for German) is intended to provide phonetic transcriptions of intonation, phonological transcription, or possibly neither of the two (Grabe 1998). Taylor (2000: 1709) critically indicates that “there has been no evidence to show that there are strict boundaries between intonational units which signal abrupt changes in meaning”. He continues to say that if intonational sound *SA* gives rise to meaning *MA* and sound *SB* gives rise to meaning *MB*, then a sound half-way between *SA* and *SB* can certainly give rise to a meaning somewhere between *MA* and *MB* (ibid.). Along these lines Fox (2000) adds:

[T]he continuous phonetic scale is reflected in a parallel continuous scale of meaning. It is therefore difficult to identify on the basis of the criterion of distinctiveness of meaning a restricted number of phonologically distinct entities which underlie the very large number of occurring manifestations (Fox 2000: 275).

Methodologically, then, the use of a quantitative phonetic model, which allows one to model every *f0* movement, regardless of where stress is located in the segmental string, seems more optimal. For the temporal aspect, the phonological claim is the same, and here, the traditional phonological distinctions are by and large found in the data. However, the duration of a particular sound is very variable, so that also in timing an unambiguous attribution of a duration pattern to a stress value or to a specific syllable position within the phrase is not possible.

Furthermore, opting for a quantitative account of prosodic features of Swiss German constitutes a significant contrast to a majority of intonation studies working in abstract and symbolic frameworks. Here, the first methodological step consists of analyzing and parametrizing the *f0* contour. Only in a second step we establish the linguistic analysis of these mathematical parameters and their relation to the individual segments. This provides innovative insight into dialectal *f0* contours that is not conceivable with symbolic, syntactic, or functional conversational analytical analyses. Hence, the findings in the current study can complement, specify, and support existing findings on *f0* patterns and on statements on temporal aspects of Swiss German. In addition, even minor differences in *f0* realizations and in durational relations, albeit on a subphonemic level, may in the end prove to be perceptually relevant for a cross-dialectal comparison – as it has been attested for the segmental level (cf. Haas 1978). The different temporal and intonational patterns in marking phrase boundaries will most probably not

be of phonological difference. Nevertheless, they show different prosodic models, which may potentially mark different functions. Apart from a contingent differentiation in meaning within a dialect these differences characterize each dialect with a specific sound that is perceived and stereotypically attributed (Leemann and Siebenhaar 2008b, Zimmermann 1998). This perceptual finesse should make us cautious about phonological preconceptions of prosodic entities, since they imply distinct boundaries, where we still have to find them. To accept a blurred distinction between phonology and phonetics may help us facing prosodic diversity in a multi-layered dialect area without blinkers and illusions, which opens the path to new methodological approaches.

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Phonological typology, rhythm types and the phonetics-phonology interface. A methodological overview and three case studies on Italo-Romance dialects

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1. Introduction

Phonological typology has mainly concentrated on phoneme inventories and on implicational universals, whereas the notion of ‘language type’ appears to be less appealing from a phonological perspective. An interesting candidate for establishing language types on the grounds of phonological or phonetic criteria would have come from the dichotomy of ‘stress-timing’ vs. ‘syllable-timing’, if instrumental research carried out by a number of phoneticians had not invalidated the fundamental claim of the so-called ‘isochrony hypothesis’. Nevertheless, the idea of classifying languages according to their rhythmic properties has continued to inspire linguists and phoneticians, giving rise to two diverging methodological perspectives. The focus of the first framework mainly lies on how phonological processes relate to prosodic domains, in particular to the syllable and to the phonological word. Along the second line of research, new quantitative metrics have been proposed in order to grasp the rhythmic properties of speech signals in different languages.

This contribution aims at bridging the gap between phonological and phonetic approaches to linguistic rhythm by paying particular attention to methodological issues. The second section gives an overview of basic issues and major findings in the field of phonological typology, focusing on segment inventories, syllable structure and prosodic features. The third section is devoted to language rhythm and the different ways it has been conceived of in the last fifty years. Finally, the fourth section is dedicated to three case studies of a number of Italo-Romance dialects dealing with vowel systems, syllable types and rhythm metrics.

2. Phonological typology

2.1. Phonology and linguistic typology

At the first International Congress of Linguists in 1928, the members of the linguistic circle of Prague postulated a division of labor between phonetics and phonology, arguing that researchers should distinguish between the physical manifestation of speech sounds and their role as functional elements of a language system. Phonology then received its foundations as an autonomous subdiscipline of linguistics in the influential monograph of Trubetzkoy (1939), which is based on the scrutiny of numerous descriptions of languages from Europe, Asia, Africa and even North America. The *Grundzüge* offer a compendium of what was known about the structure of segment inventories at that time and, in a sense, they also bear some elements of a typology *avant la lettre*; nevertheless, Trubetzkoy's goal was essentially methodological, aiming at establishing categories that are useful for discovering the sound patterns of human language(s). Some of the analytical tools elaborated within this enterprise were destined to become part of modern linguistic reasoning, e.g. the idea of 'feature bearing' (*merkmalhaft*) which gave rise to the notion of 'markedness', a key term in linguistic typology (cf. Croft 1990: 64).

Among the fundamental texts in the history of phonological typology one should mention the seminal contribution of another member of the Prague circle, namely Jakobson's (1941) study on child language and aphasia. Often blamed for its alleged reductionism and empirical weakness, this essay not only invoked the parallelisms between language acquisition and language typology (*Typologie der Völkersprachen*; cf. Jakobson 1941, §31), but it also laid the ground for the concept of 'implicational universals', maintaining that synchronic 'sound laws' were determined by a *solidarité irréversible* (Jakobson 1941, §§14–15). The argument runs as follows: if children acquire a given speech sound B later than speech sound A, the languages of the world may not contain B without also having A.

Precisely this method of stating generalizations on human language was developed in Greenberg's (1966a) seminal work on language universals of morphology and word order, which has been considered the foundation of 'linguistic typology' as a proper field of scientific inquiry (Croft 1990: 2). Another pioneering paper by Greenberg (1966b) also contains a chapter devoted to phonology, dealing with phenomena such as the voicing of consonants, vowel nasalization and vowel quantity. In this analysis, marked-

ness relations are derived from the examination of token frequencies in a small number of languages, demonstrating that voiced stops, nasal vowels and long vowels are more marked than unvoiced stops, oral vowels and short vowels. The rapid growth of linguistic typology as a research area led to the four volumes of *Universals of Human Language* (Greenberg et al. 1978), the second of which is entirely dedicated to phonology, offering thirteen studies on particular topics such as vowel systems, nasal vowels, consonant clusters, phonological processes, tone, intonation, and the like.

If phonology played an essential role in the birth of linguistic typology, both in its methodological foundations and in the topics under investigation, the further development of the field showed a clear preference for syntax and morphology as major concerns of the typological research agenda. The rather marginal status of phonology is also reflected by the contents of later publications which present the state of the art in linguistic typology, e.g. the introduction written by Croft (1990), the two HSK volumes on typology and universals (Haspelmath et al. 2001), and the *World Atlas of Language Structures* (Haspelmath et al. 2005, henceforth WALS).

In any case, it seems that for many years phonological typology has mainly been a concern of phonologists (and to some extent also of phoneticians), rather than of typologists (cf. Hyman 2007).¹ On the methodological grounds laid at Stanford by the impact of Greenberg's ideas, the most ambitious project was carried out at UCLA under the guidance of Ian Maddieson, focusing on segment inventories and implicational universals (2.2). Phonotactic analyses are not as easily available as descriptions of phoneme inventories, and this might be one of the reasons why syllabic typology developed later and in a more heterogeneous manner (2.3). As regards prosody, the different features – such as tone, accent, and intonation – have often been treated separately, but strong efforts are being made in gathering comparative evidence from an increasing number of languages (2.4).

An interesting methodological difference between the different threads of typological linguistics comes from the observation that implicational universals have been formulated on the levels of syntax, morphology, and phonology, whereas the notion of 'language type' (cf. Croft 1990: 27–43) has most often been used in morphology (hence the distinction between inflectional, agglutinating and isolating languages) and for word order (where languages are classified as belonging to, e.g., the SVO or the SOV type). In the field of phonological typology, the concept of a linguistic type has played a rather marginal role until recently (cf. 3.2), since scholars have mainly focused on individual phenomena that can be analyzed in a binary

way (or in terms of implications) rather than adopting a generalizing approach to typological classification. Still, nothing contradicts the notion a priori that the sound shape of a particular language may exhibit features that are inherently related to one another and that languages belonging to different genetic groupings adhere to an abstract structural model that one might conceive of in terms of a ‘phonological type’. Indeed, there have been a few isolated proposals which classified languages into discrete phonological types.

For instance, Milewski (1970: 71–74) operated a binary distinction between ‘vocalic’ and ‘consonantal’ languages, depending on how a particular phoneme inventory departs from what he calls the universal ‘primary system’ consisting of 10 elements (the vowels /i a u/, the stops /p t k/, the nasals /m n/ plus one spirant and one liquid). In a language belonging to the ‘vocalic type’ like French, the ratio between primary and secondary elements is greater than zero, whereas in a language of the ‘consonantal type’ like Polish the ratio is below zero. In a nutshell, Milewski’s typology is based on assumptions about the universality of certain segment types (the primary system) and the ratio between vowels and consonants within a phoneme inventory.

Now, the ratio between the number of consonants (C) and the number of vowel qualities (VQ) is also represented as an approach to phonological typology in WALS (cf. Maddieson 2005c), allowing a division of languages into five categories, namely those with a low (<2), a moderately low (2–2.75), an average (2.75–4.5), a moderately high (4.5–6.5), and a high C/VQ ratio (>6.5). Nevertheless, it is clear that we are not dealing with language types in the sense of feature constellations, but rather with a single typological parameter. Moreover, an analysis of a 680 languages reveals no predictable relationship between the number of vowels and consonants in a segment inventory (Maddieson 2011: 541–542; cf. also Maddieson 2005c), and we may recall that the “normal autonomy of the two phonemic patterns” had already been invoked by Martinet (1962: 75).

Still, the consonant-vowel-ratio appears as a parameter of the “prosodic typology of language” proposed by David Gil (1986). This holistic approach distinguishes between two basic language types which are defined by a number of phonological and other structural features: ‘iambic’ languages would have fewer segments in a syllable, a high consonant-vowel-ratio and SOV as the basic word order, whereas ‘trochaic’ languages would present more segments in a syllable, a low consonant-vowel-ratio and SVO as the basic word order. For our purpose it is interesting to note that, at a

certain point, Gil (1986: 197) refers to iambic languages as “stress-timed” and to trochaic languages as “syllable-timed” (cf. 3.1).

Though not quoted by Gil, a similar holistic typology had been proposed by Donegan and Stampe (1983) on the basis of a typological study of the Munda and Mon-Khmer languages. According to their analysis, the Mon-Khmer languages are characterized by iambic stress pattern, isoaccental timing, complex syllable structure and SVO word order, whereas the Munda languages display the opposite characteristics, i.e. trochaic stress pattern, isosyllabic timing, simple syllable structure and SOV word order. As we can see, the feature couplings of Donegan and Stampe (1983) and Gil (1986) do not coincide, and they also differ with regard to other parameters such as tone and morphological word structure. It lies outside the scope of this contribution to discuss these typologies in greater detail, but we will briefly return to these issues when discussing the phonological reinterpretation of the traditional isochrony hypothesis (cf. 3.2).

Now, before roughly sketching some of the major topics in phonological typology (segment inventories, phonotactics, prosody), let us point out a methodological aspect which turns out to be of particular relevance to the present study, i.e. the size of the language sample and to what degree it can be considered as representative. In a ‘general typology’ approach, the sample size of the languages taken into account is supposed to be as large as possible and as balanced as possible in terms of genetic language families. Another possibility, however, is to choose a sample of genetically related language varieties; it is precisely such a ‘limited typology’ approach (Ineichen 1991: 21) we will adopt in the three case studies on Italo-Romance dialects (cf. 4).²

2.2. Segment inventories and phonological universals

As already mentioned, the bulk of typological work in phonology has dealt with vowel and consonant inventories. For instance, descriptions of 209 languages had been gathered in the *Stanford Phonology Archive Project*, from which Crothers (1978) carried out a detailed typological analysis of vowel systems. However, the most important enterprise in phonological typology is the *UCLA Phonological Segment Inventory Database* (UPSID). The first edition included 317 languages and allowed already for a number of interesting generalisations (Maddieson 1984). Subsequently, the database was enlarged to 451 languages (Maddieson and Precoda 1990).³ Since

then, the UPSID has been updated to include 637 languages (Maddieson 2011: 535).

The study of segmental typology provides different kinds of information about the vowel and consonant systems of the world's languages. Firstly, it allows for some descriptive statistics about the size of segment inventories. Secondly, a few absolute and a number of implicational universals about segmental patterns have emerged. Thirdly, some scholars have tried to explain these patterns on the ground of general principles regarding human communication.

The size of consonant inventories varies from 6 in Rotoka to 128 in !Xóǀ. Most frequently, though, languages have little more than 20 consonants, as is shown by the mean (22.7), the median (21) and the modal value (22) in the extended UPSID sample of 563 languages; a subdivision into five categories – small, moderately small, average, moderately large, large – yields a normal distribution around these values of central tendency (Maddieson 2005a, 2011: 540–541). Vowel systems may use from 2 to 14 different qualities (with a higher number of phonemes if length is taken into consideration as well), and there is again a clear central tendency, the mean being close to 6 and the modal number being 5 (Maddieson 2005b, 2011: 541).

Besides the tendencies regarding the size of segment inventories, there are also some general qualitative patterns in vowel and consonant systems which can be described in terms of 'absolute' and 'implicational' universals. Phonological universals of the absolute type – “all languages have stop consonants” and “all languages have at least two heights of vowel qualities” – are scarce and offer only elementary insights into the sound pattern of human languages; more interesting are 'implicational statements' (Maddieson 2011: 544) about the probability of particular segments to occur in a given language. Such generalizations – which may always have some counterexamples – are in line with Jakobson's *solidarité irréversible* and Milewski's 'primary system' (cf. 2.1): some 'basic' speech sounds have been observed to be more frequent among the languages of the world, while complex sounds tend to occur mostly in inventories with many elements.

This brings us to the problem of how to interpret the implicational findings. Quite naturally, some explanations invoke ease of articulation as a basic principle: for instance, Maddieson (2011: 535) convincingly argues that voiced fricatives are typologically marked, because frication and voicing are difficult to combine in terms of aerodynamic and gestural control.

As regards vowels, Martinet (1962: 79–80) attributed the higher frequency of front vowels to the greater size of the anterior mouth cavity. Still, the majority of phoneticians and phonologists nowadays would subscribe to a more perceptual point of view. This is the case for the ‘dispersion theory’ (Liljencrants and Lindblom 1972), which states that phonemes tend to be maximally distant in the acoustic vowel space in order to enhance perceptual contrast; similarly, the ‘dispersion-focalization theory’ (Schwartz et al. 1997) explains the perceptual salience of rounded front vowels – which are marked in terms of dispersion – as a consequence of their formant proximity. Thus, phonological universals appear to be not only functionally motivated, but to a certain extent also phonetically grounded.⁴

We will return to the typology of vowel systems on the occasion of our first case study on Italo-Romance dialects (4.1), but let us first consider two topics which are of paramount importance for a typology of language rhythm: phonotactics and prosody.

2.3. Phonotactics and syllable structure

It is an obvious observation that phonological systems differ not only paradigmatically, i.e. with regard to the segments used to build contrasts among words, but also syntagmatically, i.e. with regard to the combinations of segments they allow for. The relevance of phonotactics for a phonological typology was pointed out by Martinet (1962: 75) and the universally unmarked status of the CV syllable had already been postulated by Jakobson (1941: §§ 23–24). Nevertheless, it seems that phonotactic typology has not been practiced to the same degree as segmental typology; this is maybe due to the fact that descriptions of segment inventories are more easily available than descriptions of syllable templates.

There are some exceptions, however. One of the first typological investigations on phonotactic patterns was provided by Greenberg (1978), who – on the basis of a survey of 104 languages – formulated no less than 40 universals about initial and final consonant clusters. Some of these implicational statements are related to the size of consonant clusters, whereas others refer to the phonetic content of consonant clusters and coincide with the idea that segments are sequenced within the syllable along a scale of ‘sonority’ (cf. below).

Even if the UPSID project was primarily concerned with segment inventories, the possible syllables were calculated for 9 selected languages, yielding a range from 173 syllables in Hawaiian to 23,638 syllables in Thai;

a general conclusion was that “syllable inventory size does not depend heavily on segment inventory size” (Maddieson 1984: 23). Recent work in syllabic typology has divided a sample of 486 languages into three types (Maddieson 2005e): 61 languages (12.6%) only allow a ‘simple’ syllable structure (CV), whereas 274 languages (56.4%) permit a ‘moderately complex’ syllable structure with templates such as CCVC; finally, 151 languages (31%) may have ‘complex’ syllable structures, e.g. CCCVCCC. A more refined syllabic typology would not only add further information about consonant clusters in word-internal position and at the margins of the word (Maddieson 2011: 546–547), but it would also specify which segment classes may occur in a particular phonotactic slot.

One analogy between the typologies of segments and syllables comes from token frequency. Even in languages with a complex syllable structure – as in the case of most European languages – the most frequent syllable types are CV and CVC: this holds for German, English, Spanish and French (Delattre 1965: 41), Italian (Schmid 1999a: 159) and the Swiss German dialects of Berne and Zurich (Keller 2008: 61). Nevertheless, there are differences between the Germanic and the Romance languages which might be relevant from the perspective of rhythm typology (cf. 3.2).

Useful generalizations for a phonotactic typology have been formulated by Theo Vennemann (1988) in a study in comparative diachronic phonology, postulating a number of ‘preference laws for syllable structure’ on the basis of two universal preferences. According to the first tendency, languages prefer CV as the universally unmarked syllabic template; therefore, CCV and CVC are more marked than CV, and CCVCC is more marked than CCVC etc. The second preference comes from the observation that, if consonant clusters occur, segments tend to be sequenced in order to maximize their contrast in terms of ‘sonority’ (or ‘consonantal strength’), which normally increases (or decreases) from the syllable margins towards the nucleus (cf. Vennemann 1988: 9).

For our purpose, it is important to note that the typological markedness of a syllable pattern can be defined in terms of its numerical complexity and its adherence to the sonority principle; this is of particular relevance for the phonological analysis of rhythm we adopt (cf. 3.2, 4.2).

2.4. Prosodic typology

Typological studies of prosody have followed two main approaches. The ‘holistic’ approach is essentially tied to the notion of rhythm (cf. 2.1, 3.2)

and devoted to the definition of ‘language types’. The prevailing line of research, however, is more ‘atomistic’ in nature, since it is concerned with single typological ‘factors’ or ‘prosodic features’ (Maddieson 2011: 536) such as intonation, tone, vowel harmony, and word accent.

The study of intonation – i.e. of the modulations of fundamental frequency within an utterance – hardly allows for the formulation of linguistic universals. This is due not only to the many linguistic and paralinguistic functions of intonation, but also to the continuous nature of fundamental frequency, which raises intrinsic difficulties to any analysis in terms of discrete entities. Not surprisingly, WALS does not contain a map or a chapter dedicated to intonation. Nevertheless, considerable efforts have been made to gather comparative data from an increasing number of languages; for instance, the volume edited by Hirst and Di Cristo (1998) contains descriptions of the intonation systems of 22 (mostly European) languages. In some cases (e.g. Jun 2005), similar comparative enterprises are bound to a particular theoretical framework such as the so-called ToBI (*Tones and Break Indices*) notation; for an alternative approach to the study of intonation see Siebenhaar and Leemann (this volume).

Tones, i.e. the occurrence of lexically distinctive modulations of f_0 , have been fruitfully described with typological methods (cf. Maddieson 1978, Hyman 2001). From a sample of 527 languages (Maddieson 2005f), 307 (58.2%) are reported to have no lexical tones, whereas the tonal languages can be divided into two major classes: 132 languages (25.1%) have ‘simple’ tone systems with a two-way contrast (high vs. low) and 88 languages (16.7%) have ‘complex’ tone systems. There seems to be only a loose correlation between tonal complexity and segment inventory size, and the relationship with syllable complexity is not entirely clear (Maddieson 2005f).

Word accent is a prosodic feature that has attracted increasing interest over the last years, often from the perspective of phonological theory. Applying a typological methodology, a sample of 461 languages (Maddieson 2011: 539) can be divided into three types. In 195 languages (42.3%) accent placement is predictable (either on the first, the last or the penultimate syllable of the word), whereas in 131 languages (28.4%) accents may fall on different syllables within the word (sometimes even creating minimal pairs); finally, 135 languages (29.3%) do not have an accent within the domain of the phonological word.

By contrast, a metrical approach to prosodic typology assumes the foot, rather than the word, as the basic unit for the analysis of accentual systems.

Such a rationale is behind the *StressTyp* database, which nowadays includes 510 languages and has substantially contributed to WALS.⁵ Such a typology yields two basic metrical systems, i.e. the trochaic type (where the left-hand syllable of the foot is strong) and the iambic type (where the right-hand syllable of the word is strong). A classification of 323 languages (van der Hulst and Goedemans 2005) assigns 153 languages (47.4%) to the trochaic type and 31 (%) to the iambic type; 41 languages (12.7%) have either a dual system or an undetermined foot type, whereas 98 languages (30.3%) have no “rhythmic stress”. For our purpose, it is interesting to note that “trochaic” and “iambic” are labels of Gil’s (1986) holistic approach (cf. 2.1), but here the dichotomy is explicitly meant to refer to “rhythm types” (van der Hulst and Goedemans 2005).

Now, linguistic rhythm can be defined in two different ways, either in terms of prominence relations (as is the case of metrical phonology) or in a more ‘platonic’ fashion, i.e. as repeated sequences of structured events. The second approach is at the basis of a phonetically oriented research tradition on timing (cf. Maddieson 2011: 536–537), which is of particular interest for the purpose of prosodic typology; in this vein, rhythm types can also be considered as a combination of interacting features. This brings us to the topic of the next section.

3. Rhythm typology

3.1. The isochrony hypothesis: ‘stress-timed’ vs. ‘syllable-timed’

Probably, the phenomenon of speech rhythm has attracted more interest among phoneticians than among phonologists. This line of research takes as its point of the departure the so-called ‘isochrony hypothesis’ (Pike 1945, Abercrombie 1967), which distinguishes between two major types of languages termed ‘stress-timed’ and ‘syllable-timed’ (or ‘isoaccentual’ and ‘isosyllabic’); it has been claimed that the Germanic languages belong to the former type, whereas the Romance languages belong to the latter. In its original form, the isochrony hypothesis makes two basic claims: every language belongs to one particular rhythm type, and rhythm types are based on a timing unit (e.g., the syllable or the foot), which is supposed to occur in regular sequences of intervals with equal durations (cf. Auer and Uhmann 1988: 217).

As is well-known, the classical isochrony hypothesis has been invalidated on empirical grounds. Starting in the 1970s, acoustic measurements carried out with different languages proved that in the alleged syllable-timed languages the duration of syllables varies according to the number of their segments, as much as in the alleged stress-timed languages the duration of feet varies according to the number of their syllables (cf. the research overview in Auer and Uhmann 1988: 219–237). Nevertheless, several attempts have been made to save the idea behind the isochrony hypothesis which continued to be intuitively plausible: for instance, isochrony could be an effect of perception – rather than a mechanism of speech production – or even pertain to the realm of phonology (cf. Bertinetto 1989: 101–120). Let us examine the second hypothesis in more detail.

3.2. Two phonological types: syllable and word languages (Auer 1993)

The phonological turn in the study of language rhythm appeared in the 1980s (cf. Dauer 1983) and maintained two basic claims. Firstly, since rhythm types cannot be found in the speech signal itself, they rather derive from a bundle of properties of the phonological system; most important are the complexity of syllable structure and the reduction of unstressed vowels. Secondly, rhythm types are not absolute categories, but rather constitute poles of a typological continuum, allowing for mixed or intermediate types (cf. Auer and Uhman 1988: 244–253; Bertinetto 1989: 108–110).

This line of reasoning received its most elaborate formulation in the prosodic typology proposed by Peter Auer (1993). Drawing on a critical review of earlier holistic approaches to language rhythm (Dauer 1983, Donegan and Stampe 1983, Gil 1986), this study analyzes a sample of 34 genetically different languages by testing the correlations between more than a dozen phonological phenomena; moreover, it proposes a conceptual shift from the traditional labels of stress-timing vs. syllable-timing towards a new typological dichotomy which opposes ‘syllable languages’ to ‘word languages’ (cf. also Auer 2001: 1395–1398).

Syllable-rhythm and word-rhythm are conceived of as prototypes, and in fact the 34 languages of the sample may be ordered along a continuum – ranging from the syllable pole towards the word pole with many intermediate or mixed languages in between – on the basis of a number of prosodic parameters (Auer 1993: 94). The notions of ‘syllable rhythm’ and ‘word rhythm’ thus meet the requirements of a ‘language type’, viewed as an abstract structural model that emerges from the coexistence – and probably

from the inherent interdependence – between different parts of the phonological system, the central parameter being the prosodic domain to which features and processes refer to, i.e. the syllable or the word.

Table 1 lists a number of selected parameters which form part of this typological framework. The first two parameters, i.e. syllable complexity and adherence to the sonority sequencing principle, will be applied to a number of Italo-Romance dialects in our second case study (4.2).

Table 1. Parameters of syllable-rhythm and word-rhythm

Parameter	Syllable rhythm	Word rhythm
1 Syllable complexity	Low	High
2 Sonority scale	Obedied	Disobeyed
3 Syllable division	Unambiguos	Ambiguos
4 Assimilations	Few	Many
5 Sandhi	External=internal	External≠internal
6 Word-related processes	No	Yes
7 Word accent (phonological)	Fixed or none	Free, ±grammatical
8 Word accent (phonetic)	Weak	Strong
9 Reduction of unaccented syllables	No	Yes
10 Central vowels	No	Yes

3.3. The rhythm class hypothesis: acoustic metrics

Paradoxically, one outcome of the ‘phonological turn’ in the isochrony debate was a renewal of the phonetic perspective on speech rhythm. This is mainly due to the publication of an influential study by Ramus, Nespor, and Mehler (1999), who proposed new acoustic measures for the traditional rhythm classes. Instead of searching for equal lengths of time at the syllable or the foot level, other acoustic correlates were formulated that should better fit the phonological parameters of the two rhythm types. The degree of complexity of syllable structure is reflected by %V, i.e. the percentage over which an utterance is vocalic, and ΔC , i.e. the standard deviation of ‘consonantal intervals’ (consonant clusters regardless of syllable boundaries); the third metric is ΔV , i.e. the standard deviation of ‘vocalic intervals’ (vowel sequences regardless of syllable boundaries). The typological predictions are that the syllable-based languages would have a high %V and a low ΔC (given their preference for open syllables), whereas accent-based languages would present a low %V and a high ΔC . The third measure, ΔV , is supposed to increase in ‘stress-timed’ languages and to decrease in ‘syllable-timed’ languages, depending on the degree of strengthening of stressed vowels and the reduction of unstressed vowels.

At the beginning of the new millennium, the phonetic research paradigm which goes under the heading of ‘rhythm class hypothesis’ immediately gained a strong interest, also leading to the formulation of alternative metrics. For instance, a methodological improvement of Ramus’ metrics has been achieved by Dellwo (2006), who replaced the standard deviation of consonantal intervals by their variation coefficient (Varco) in order to neutralize speech rate effects. A slightly different view of speech rhythm underlies the so-called ‘Pairwise Variability Index’ (PVI), which calculates the average difference between immediately successive vocalic and consonantal intervals (Grabe and Low 2002).

In our third case study (4.3), we will apply some of these rhythm metrics (%V, ΔC , ΔV ; Varco C; nPVI-V, rPVI-C) to speech material available from nine Italo-Romance dialects.

4. The phonological typology of Italo-Romance dialects

4.1. Case study I: vowel systems in Italo-Romance dialects

A typological study of 58 Italo-Romance dialects (Schmid 1999b: 253–254) yielded 44 different vowel systems. The sample cannot be considered to be geographically representative, since 44 dialects of the sample are spoken in northern Italy, where more diversified vowel systems are found.

Comparing our data with the universal tendencies emerging from UPSID (cf. 2.2), the (northern) Italo-Romance vowel systems appear to be more complex and typologically marked. The vowel qualities range from 5 to 13 (UPSID: 2-14), but both the mean (close to 8) and the modal value (7) are clearly superior to the ones in UPSID (close to 6 and 5, respectively). The average number of phonemes in Italo-Romance is even higher (9.43), since many northern dialects display distinctive vowel quantity: 32.8 % against 19.2% in the first UPSID sample (cf. Maddieson 1984: 129). Long vowels only belong to systems with at least 9 vowel phonemes, thus confirming the ‘size principle’ (Maddieson 2011: 544) by which complex or marked segments – and it is reasonable to consider long vowels as such – are more likely to occur in larger inventories.

Regarding the phonetic content of vowel systems, the Italo-Romance data do confirm a number of universals that have been postulated in the literature. For instance, height distinctions equal or exceed the number of backness distinctions (Universal 9 in Crothers 1978: 134) in all dialects;

acoustically, this finding can be motivated by the greater robustness of the first vowel formant. A number of northern Italian dialects have rounded front vowels which are typologically marked; in an extended UPSID sample, only 6.6% of 562 languages do have such phonemes in their inventory (Maddieson 2005d). Conforming with the typological generalization by which “rounded front vowels do not occur unless unrounded front vowels of the same basic height occur” (Maddieson 1984: 14), /y/ implies /i/ in 27 dialects, /ø/ implies /e/ in 21 dialects, and /œ/ implies /ɛ/ in 4 dialects. From this picture another implicational universal follows quite naturally: “/ø/ and /œ/ do not occur (separately or together) unless /y/ also occurs” (Maddieson 1984: 14), as holds true for 21 dialects. Finally, phonemically nasal vowels are absolutely marginal in the Italo-Romance area, being attested only in 2 dialects (3.4% of our sample), against 24% in the *Stanford Phonology Archive* and 22.4% in the first UPSID sample (cf. Crothers 1978: 124, Maddieson 1984: 130); moreover, these two dialects have only few nasal vowel phonemes within a rather large inventory, thus confirming a famous universal formulated by Ferguson (1966: 58; cf. also 2.1).

Returning to the overall number of vowel phonemes and trying to establish a link between segmental and phonotactic typology (cf. 4.2), it is worthy to note that the dialects with a simpler syllable structure also tend to have a lower number of stressed vowel phonemes. At least, this holds true for Sicilian (5), Tuscan (7) and Venetian (7); conversely, dialects with a more complex syllable structure also tend to have a greater number of stressed vowel phonemes: Turinese (9), Milanese (12), Romagnolo (12), Friulian (14). The greater or lesser diversity of vocalic timbres may therefore be related to different degrees of perceptual weight attributed to accented syllables.⁶

4.2. Case study II: syllable types in Italo-Romance dialects

As we have seen in 3.2, the first two parameters of the typological framework of syllable and word languages proposed by Auer (1993) are syllable complexity and adherence to the sonority scale (cf. table 1): syllable languages exhibit a simple phonotactics both in quantitative and qualitative terms, whereas the opposite holds for word languages. In this section, we will analyze the phonotactics of ten Italo-Romance dialects in light of these two parameters. A typological continuum was already sketched in a diachronically-oriented study (Mayerthaler 1996), ranging from dialects with a rather unmarked syllable structure (e.g. Sicilian) through dialects of an

intermediate type (e.g. Neapolitan and Tuscan) to dialects with a rather marked syllable structure (Romagnolo, Piedmontese); note that this continuum is also geographical in that it gradually proceeds from the south to the north of the Italo-Romance area.

In order to verify this hypothesis on synchronic grounds, data have been gathered by inspection of individual dictionaries, considering the following ten dialects: Friulian, Venetian, Feltrino (an alpine Veneto dialect), Milanese, Piedmontese, Romagnolo, Pisan (=Tuscan), Neapolitan, Bitontino (=Apulian), and Sicilian (see Schmid 1998, 2000, submitted, for geographical details and references about the bibliographical sources). The first of the two phonotactic parameters mentioned above – complexity of the syllable shell – can be illustrated by means of the number of possible ‘syllable types’, i.e. linear sequences of segments (CV, CVC, CGV etc.) pertaining to three major classes: C=consonants, V=vowels, G= glides; treating glides as a separate category permits highlighting the existence of rising and falling diphthongs in some dialects.

Figure 1 shows that Italo-Romance dialects indeed exhibit a considerable diversity in terms of phonotactic complexity.

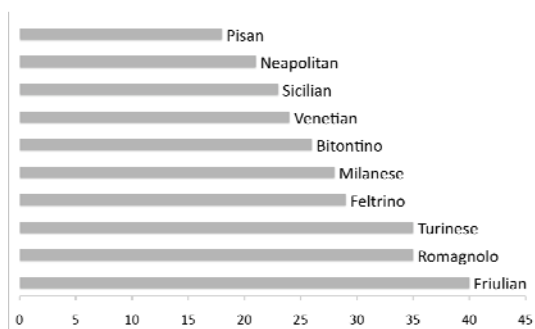


Figure 1. Number of syllable types in ten Italo-Romance dialects

The minimum number of syllable types (18 in Pisan) is less than half of the maximum (40 in Friulian). Moreover, it is impossible to divide the ten dialects into two clear-cut rhythm types; instead, we are faced with a typological continuum which gradually progresses from the top to the bottom of the graph as the numerical complexity of syllable structure increases. However, the typological continuum does not coincide exactly with a geographical continuum, contrary to Mayerthaler’s assumption. It is true that the five dialects in the upper half (which we could categorize as rather accent- or word-based) are all spoken in northern Italy, whereas the majority of the five dialects in the lower part (which we could categorize as rather more

syllable-based) are spoken in central or southern Italy; nevertheless, among the syllable-based dialects we also find one northern dialect, Venetian; moreover, the most simple syllable structure appears in the center of Italy, i.e. in Pisa, and not in the south, e.g. in Sicily (cf. 4.3); this is somewhat surprising, since some scholars (e.g., Mayerthaler 1996: 209) actually attribute a strong preference for CV syllables to Sicilian; however, one should bear in mind that this dialect also has many closed syllables due to diachronic gemination (cf. Schmid 1997: 259).

Now turning to the second phonotactic parameter, i.e. sonority relations in syllable heads and codas, we can distinguish between three subtypes among the five dialects in the lower part of Figure 1. The first subtype consists of Milanese and Feltrino, which – besides having a numerically less complex syllable structure – also exhibit less marked sonority relations. Word-initially, Milanese and Feltrino order consonants like the syllable-based dialects, mainly combining obstruents with vibrants or approximants, whereas word-finally they allow clusters of two consonants like /rn/, /st/ or /nt/; this pattern is absent in the syllable-based dialects, but nevertheless conforms to the sonority scale. The second subtype is represented by Friulian, which contains the most marked syllables in terms of numerical complexity, while essentially adhering to the sonority principle (albeit in a less exemplary way): word-initially, it also permits clusters with laterals such as /kl/, and word-finally we find triconsonantal clusters like [ŋks] with a sonority reversal due to the sigmatic plural. Finally, the most marked sonority relations occur in the third subtype, represented by Piedmontese and Romagnolo – a finding which is in line with Mayerthaler's continuum. For instance, these dialects allow word final sequences with two stops like *salvätk*; sonority plateaus also appear at the left periphery of the phonological word, as is shown by examples like *vsen* or *pké*. The most marked clusters consist of three obstruents, like in *sbdel* or *pské*, which may also be followed by an additional vibrant, as in *vspre* or *pstren* (see Schmid, submitted, for additional examples and a more detailed analysis of the consonantal clusters).

4.3. Case study III: applying the rhythm metrics to Italo-Romance dialects

In order to test the rhythm class hypothesis for the Italo-Romance dialect continuum, a corpus has been built with speech data for the same dialects that had been subject to the phonotactic analysis in 4.2, with the exception

of Romagnolo for which no publicly available data could be found; for each dialect ten utterances have been analyzed acoustically.

Figure 2 compares two alternative rhythm metrics, ΔC and Varco C, projected against %V. The rhythm class hypothesis predicts that syllable-based dialects (represented with circles) should be placed at the center of the plane, whereas accent- or word-based dialects (represented with rhombi) are located in the upper part to the left.

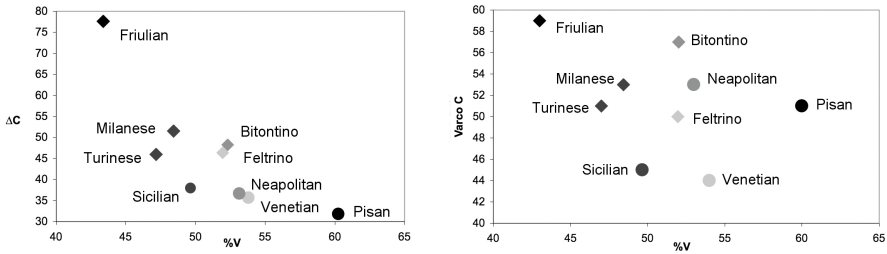


Figure 2. %V, ΔC (left) and %V, VarcoC (right) for 9 Italo-Romance dialects

Comparing the horizontal axis of the two planes in Figure 2 with Figure 1 above, one notes a certain coincidence in the ordering of the dialects, suggesting that %V can indeed be interpreted as an acoustic correlate of syllable complexity (or at least of the preference for open syllables); for instance, we notice both in Figure 1 and in Figure 2 a rather peripheral position of Friulian and Turinese (accent-based) and of Pisan (syllable-based). In analogy with the phonotactic data (cf. 4.2), Pisan shows a much higher %V than Sicilian. Milanese remains a bit more left than Bitontino and Feltrino in Fig. 2, but these three dialects are still located in a relatively central area of the rhythm plane. In both Figure 1 and Figure 2 Neapolitan and Venetian tend towards the syllable-based pole of the continuum.

As regards the vertical axis, which reflects the complexity of consonantal clusters, the two planes of Figure 2 report different measures. It appears that the extreme position of Friulian in the diagram on the left is not only due to the heavy consonantal clusters of the language (cf. 4.2), but also to the slow speech rate of the recorded speaker. The normalization effect of Varco (an important methodological improvement) also affects Feltrino which moves towards the syllable-based bottom, whereas Neapolitan and Bitontino (two geographically related dialects) move towards the accent-based top.

Figure 3 again compares two rhythm metrics for the durations of vocalic and consonantal intervals (cf. 3.3), i.e. the standard deviations to the left

(according to Ramus, Nespor, and Mehler 1999) and the ‘Pairwise Variability Indices’ (PVI; cf. Grabe and Low 2002) to the right.⁷

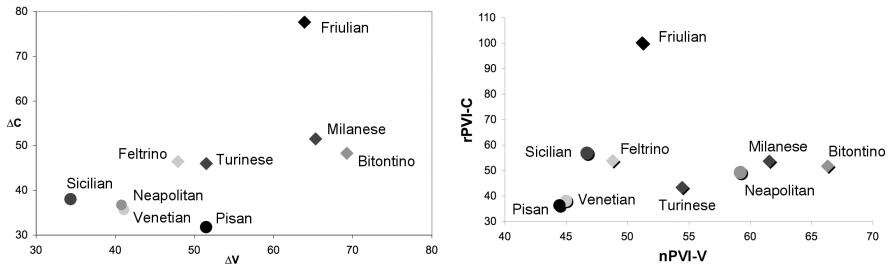


Figure 3. ΔV , ΔC (left) and PVI values (right) for 9 Italo-Romance dialects

All in all, the results differ less than one would expect. On the consonantal axis, Friulian again appears in a position by itself, since both ΔC and $rPVI-C$ are not normalized for speech rate; as a methodological consequence, our data underpin the need of rate normalization for rhythm metrics. Still on the vertical axis, Sicilian moves up in the PVI plane, maybe due to subsequent singleton and geminate intervals. On the horizontal axis (where the PVI adopts a normalized measure), differences are more tangible: Pisan shifts to the left, revealing a more regular (‘isovocalic’) pattern, whereas the dramatic move towards the right of Neapolitan can be explained by the heavy reduction of unaccented vowels (a phenomenon which also characterizes the Apulian dialect of Bitonto). From a methodological point of view it seems therefore that the more global ΔC metric indeed reflects syllable complexity, but that the sequential vocalic PVI approach is better suited for another parameter of rhythm typology, i.e. vowel reduction.

5. Concluding remarks

Where do we go from here? From the few insights we have gained in this short *tour d’horizon*, phonological typology appears as a somewhat neglected, but nevertheless promising – and hopefully soon flourishing – field of linguistic inquiry that presents a rich research agenda but also a number of methodological problems. Segmental typology comes with a solid and steadily growing body of well-organized data, providing us with a number of empirically tested implicational universals. The descriptive value of prosodic typology can be taken for granted, at least as far as single parameters like accent or tone are concerned; one can also reasonably assume that

phonological typologists know the basic dynamics of phonotactics in the languages of the world, despite the controversies that may exist with regard to the appropriate formal analysis of syllable structure.

Do phonologically defined ‘language types’ exist? This is still a matter of debate, and some scholars cast doubts on the feasibility of a holistic typology with regard to phonology. For instance, Schiering (2007) tested ten phonotactic, prosodic and morphological parameters, finding that in a sample of 20 representatively chosen languages only six of the parameters proposed by Auer (1993) correlated significantly with the alleged rhythm types; nevertheless, he concludes that languages may be situated on a typological continuum ranging from a mora-based to a stress-based pole.

The purpose of the three case studies summarized in the present paper has been somewhat less ambitious. On the one hand, our research aimed at verifying the methodological value of a ‘limited’ typology, operating within a genetically and geographically restricted dialect group. The first case study on vowel systems not only permitted to position the Italo-Romance dialects within the ‘typological space’ of the world’s languages; it also allowed to demonstrate the validity of a number of implicational universals within the ‘limited’ sample. The second case study provided evidence in favour of two parameters of Auer’s (1993) dichotomy of word-based and syllable-based languages: Italo-Romance dialects can be ordered on a continuum of increasing numerical syllable complexity, and some of the more word-oriented dialects heavily run counter the unmarked sonority relations. Finally, the third case study showed that a phonetic study of speech rhythm yields relatively robust acoustic correlates of syllable complexity, demonstrating that the research tools developed by the ‘rhythm class hypothesis’ may function as a companion to phonological typology. Here again, analyzing dialects from a restricted area may provide results that are similar to the findings of general phonetic typology, given that in a sample of 22 genetically balanced languages, complex syllables correlate with higher ΔC and lower %V values: as a matter of fact, “in a multiple regression analysis, syllable structure has a significant effect on both ΔC and %V at the $p < 0.005$ level” (Easterday, Timm and Maddieson 2011: 625).

This finding obviously raises the final methodological question about the relationship between phonetics and phonology. More than eighty years after the theses of the Prague circle, the two linguistic subdisciplines have indeed developed in separate directions to a large extent. Nevertheless, there is reason to argue that both linguistic typology and acoustic investiga-

tions contribute in a complementary manner to our understanding of phonological structure.

Notes

1. The marginality of phonology has possibly always been inherent in typological linguistics throughout its history, if we consider Martinet's (1962: 69–70) complaint that language classifiers concentrate on morphological features and his plea for phonology as an essential part of linguistic typology.
2. Obviously, linguistic typology is presented here in a somewhat 'traditional' manner; see Zúñiga (this volume) for recent developments in this field.
3. This version can be accessed online at:
<http://web.phonetik.uni-frankfurt.de/upsid.html>
4. Note, however, that phonological universals represent statements about structural properties of phonological systems. They can be explained through 'mechanistic' constraints of speech production and perception, but they are not to be confused with phonetic universals *stricto sensu* such as i) "higher vowels have higher f0 than lower vowels", ii) "higher vowels are shorter than lower vowels", iii) "the vowel before a voiced consonant is longer than that before its voiceless counterpart" (Maddieson 1997: 624).
5. See, in particular, van der Hulst, Goedemans and van Santen (2010). An online version of the database is available at <http://www.unileiden.net/stresstyp/>.
6. Unfortunately, we do not have data about the unstressed vowel systems at our disposal, which is a crucial element of rhythm typology (cf. 3.2).
7. Note that in the PVI plane the vocalic and consonantal axes have been inverted with respect to the representation in Grabe and Low (2002: 530) in order to make it comparable with the $\Delta V/\Delta V$ -plane (cf. Ramus 2002).

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 this vol. Language description and linguistic typology.

Indirect measurement in morphological typology

Bernhard Wälchli

1. Introduction

Languages differ in how much information is packed in a word.¹ Consider example (1) where English uses four words for what is expressed in one word in Finnish. Finnish is a more synthetic language than English. In maximally analytic word structure, a word expresses only one lexical or one grammatical meaning at a time. Accordingly, analytic languages have many function words, words expressing grammatical meaning only, such as prepositions and pronouns. In synthetic word structure, a word expresses several grammatical meanings along with its lexical meaning. Grammatical morphemes such as case and possessive affixes abound as in (1b) where there is an illative case marker and a possessive suffix for the third person.

- (1) English as a more analytic and Finnish as a more synthetic language²
- | | | | | | | | |
|----|-------------|------------|--|------------|----------------|----|----------------------------|
| a. | <i>into</i> | <i>his</i> | | <i>own</i> | <i>country</i> | b. | <i>koti-kaupunki-i-nsa</i> |
| | ILL | POSS3SG.M | | own | country | | home-city-ILL-POSS3 |

Morphological typology is a traditional field within linguistic typology concerned with assessing the degree of cross-linguistic variation in morphology – the internal structure of words. As the name “typology” suggests, the original idea was that languages can be classified into a small set of neatly discrete types. Accordingly, there would be, for instance, two types: synthetic and analytic languages, or three types: polysynthetic, synthetic and analytic languages.

A major progress in morphological typology was made in 1954 when Joseph Greenberg – notably in a contribution to a festschrift – suggested that synthesis and other features of morphology should be measured on a continuous scale as synthesis is a matter of degree rather than a set of discrete types. The method he proposed for synthesis was to count the number of morphemes per number of word-forms in a continuous text. A *morpheme* is the smallest meaning-bearing unit of a word. In (1b) the Finnish word-form is segmented into four morphemes which are separated by hyphens both in the form and in the analysis as it is common in interlinear

glossing. However, morphologists do not agree whether the morpheme is an ideal solution to the analysis of word structure in all cases, especially not for inflectional morphology (see Stump 2001: 1–3). Take the example of the French word /ɛ/ <ai> ‘(I) have’ which consists of a single phoneme whose form can be hardly further segmented into parts. However, it is grammatically highly complex since it is a carrier of the grammatical meanings ‘1st person’, ‘singular’, ‘present tense’, ‘indicative mood’ and ‘active voice’ along with its lexical meaning ‘have’ (if not used as an auxiliary). If the problem of morphological segmentation is left aside – an alternative is to count the number of grammatical meanings expressed per word-form – a major disadvantage of Greenberg’s method of measuring synthesis is that it requires a high proficiency on the side of the person applying it: it can be applied only by language experts and is very labor-intensive. Not astonishingly, therefore, Greenberg’s method did not meet with much practical response.³

If it is not possible to measure what one wants to measure directly, it can be attempted to measure something else which is easier to measure and where there is good reason to assume that there is a strong correlation with what has been aimed at originally. This is *indirect measurement*. Indirect measurement is practiced throughout science as a method to make the impossible possible and to make science less costly. Dendrochronologists measure time by counting rings in wood, assuming that every ring is a year and that each year features characteristic properties in the corresponding ring. Trigonometry allows us to measure the height of mountains without having to climb them. Mainstream astronomers hold that the red shift in the spectrum of a galaxy correlates with its distance.

Indirect methods of measurement are also widespread in most different branches of linguistics. In psycholinguistics, for instance, reaction time is considered to be an index of speed of processing (see also Vorweg, this volume). Formal semanticists approach meaning indirectly by considering exclusively under which conditions utterances are true or false. In morphology, the best-known approach to indirect measurement is probably Harald Baayen’s proposal to measure productivity of derivational affixes in terms of hapax legomena (words occurring only once) per token frequency of the words generated by a derivational process. Neologisms are assumed to occur only once, established “old” words are assumed to be more frequent on average (see, for instance, Baayen and Lieber 1991 and Bauer 2001: 145–162 for a critical discussion). A widespread indirect approach in typology is the semantic map approach where semantic similarity is ac-

cessed by means of recurrent identity of form cross-linguistically (Haiman 1985; Haspelmath 2003; Wälchli and Cysouw 2012).

This chapter explores to what extent indirect methods of measurement might be useful in morphological typology. For measuring the degree of synthesis it is profitable to take samples from different languages with highly similar content and highly similar length written in the same kind of register and style in the same genre. This is approximated in parallel texts (Cysouw and Wälchli 2007). A parallel text of substantial size which is available electronically in many languages from all continents is the New Testament, from which example (1) is taken (Mark 6:1). In this context it is important to note that it is impossible to address language directly. All that can be considered in empirical linguistics are *doculects*, documented language varieties, be it in form of secondary data (such as reference grammars) or primary data (such as texts, as used in this paper).

The same content in a more analytic language is packed into more word-form tokens than in a synthetic language. (Word-form tokens are all instances of word-forms in a text; types are the set of unique word-forms in a text. The first sentence of this paragraph contains two tokens of the type *in*.) In the short example in (1) there are four word-forms in English as opposed to one in Finnish. However, more compact synthetic word-forms are less likely to be recurrent in a text than analytical function words. The word-form type *kotikaupunkiinsa* occurs only four times in the Finnish N.T., whereas *into* occurs 604 times in the American Standard translation. In parallel texts, therefore, more word-form tokens mean a higher degree of analysis and more word-form types mean a higher degree of synthesis. Thus, a good measure for the degree of synthesis is the *type-token ratio*. This will be further discussed in Section 2 below.

What is important to note here is that for measuring degree of synthesis it is not necessary to segment any single word-form into morphemes, the indirect approach has thus the further advantage that it is compatible also with approaches to morphological theory rejecting the notion of inflectional morpheme (Stump 2001; Aronoff 1994). Furthermore, the method is cheap (once there are parallel texts that are freely available). It can be applied without the help of any language experts.

This paper is organized as follows. Section 2 sketches a dynamic model of morphology with processing chains with increasing complexity of the representation of inner word structure based on the notion of procedural universals. Section 3 considers the indirect measurement of synthesis in parallel texts and some problems associated with it. Sections 4 and 5 ad-

dress the question as to how indirect methods can be combined with partial automatic analysis as outlined in Section 2 to become more effective. Finally Section 6 concludes this paper.

2. The text-to-device approach, algorithmic morphology, procedural universals and three levels of analysis

In this and the following sections three levels of morphological analysis will be addressed. On level zero, word-forms are considered indivisible units and their internal structure is only approached indirectly by considering their distribution across texts. On level one, only continuous segments are recognized (morphemes as occurring in a chain of strings: prefixes, stems, and suffixes) which do not exhaust the diversity of known morphological processes. Level two additionally recognizes non-concatenative processes, such as infix and ablaut. A *text-to-device approach* is applied, i.e. the word-form is taken as the basic unit and the internal structure is deduced by subsequent processes, rather than a device-to-text approach. The notion “device” is used here as a theory-neutral term for any kind of paradigmatic organization of language, such as “*langue*”, “grammar”, “competence”, “mental representation”, or “the language system”.

The text-to-device approach has the following advantages:

(a) It is accessible for computational modeling cross-linguistically, since the starting point – text – is of the same kind for all languages and easily available without previous analysis.

(b) It is more useful for descriptive linguistics and typology, since no language-specific entities must be posited to start with and the same process of analysis can be applied in the same way to material from all languages (called “man-from-Mars attitude” by Nida 1949: 1 which simply means that the linguist or the device performing the analysis does not know anything about the language to start with).

(c) It is empirical since it proceeds from given to inferred units.

The basic assumption is that the internal structure of words can be inferred from any text of sufficient length in any language by a universal algorithm, given relevant semantic cues. The approach is thus necessarily massively cross-linguistic. Only by applying the method to corpora of different languages can it be assured that the model is not biased to languages of a certain type.

Different from other approaches it is not assumed that there is a single correct morphological analysis, but rather that analysis is a processing chain from less to more abstract representations. On level zero word-forms are considered as wholes without further subdividing them into parts. Next, the first level is concatenative morphology which only recognizes continuous morphemes of three kinds: stems, prefixes and suffixes. Higher levels, then, add more complex morphological processes, such as ablaut, infixes, and partial reduplication, which are more difficult to identify and less widespread cross-linguistically. One reason for the multi-layered model is that higher-level processes are reminiscent of lower-level processes. Ablaut can more easily be addressed in terms of sets of stems where affixes have been stripped away rather than in word-forms. Infixes tend to be edge-oriented (Yu 2007: 3), which makes them similar to affixes, and partial reduplication is usually reminiscent of prefixing or suffixing.

While the underlying assumption of structural universals is that there is a certain constant structure in all languages, *procedural universals* are universally applicable algorithms which extract highly different structures when confronted with different input. Algorithms may serve both for the acquisition of linguistic categories from corpora (learning) and for measuring cross-linguistic variation in texts (typology).

A simple example of a universal in morphological typology is that any language with non-concatenative morphology (e.g., infixes, ablaut) also has concatenative morphology. Translated into an algorithm, this means that the first step is to identify stems, prefixes and suffixes and, if there are any such structures, a second step may further proceed to look for internal inflection, stem alternations, etc. First all forms likely to have the same lexical meaning on the basis of parallel distribution are extracted (a primitive universally applicable lemmatizer). Next stems defined as shared sequences are isolated and affixes are whatever is left over. Once this simple analysis has been performed, one can proceed to look for more complex morphological processes, such as internal inflection.

3. Level zero: word-forms, and degree of synthesis

Degree of synthesis can be assessed by various measures deriving from counting types and tokens in parallel texts. It is not the aim of this section to identify the best measure but rather to illustrate what happens when syn-

thesis is accounted for in terms of types and tokens, and what kinds of practical problems may arise when doing so.

A good starting point is a type-token diagram of parallel text doculects. Figure 1 displays the number of word-form types and tokens in the Gospel according to Mark in a strongly biased convenience sample of 168 languages from 46 language families from all continents.⁴ Each dot is a doculect. It is expected that synthesis will correspond to high type frequency and low token frequency (bottom right) and analysis to low type and high token frequency (top left). If first some languages from Greenberg's morpheme per word ratio counts are considered – Greenlandic [kal]⁵ 3.72, Swahili [swa] 2.55, German [deu] 1.92, English [eng] 1.68, and Vietnamese [vie] 1.06 – these are found to be arranged in a scale from bottom-right to top-left in Figure 1 as expected.⁶

However, a general observation is that most doculects strive toward a medium degree of synthesis while highly synthetic and analytic languages are the exception (see also Bickel and Nichols 2005). This might be a general problem in ranking two languages on a synthesis scale. While it is clear beyond any doubt that Vietnamese is more analytic than Greenlandic, for many other language pairs – such as Cherokee [chr] and Turkish [trk] or German and Italian [ita] – the difference might just be too subtle to be significant.⁷ It is thus easier to treat synthesis in a small sample containing extreme languages such as Vietnamese and Greenlandic than in a larger convenience sample.

No linear regression analysis need be applied to Figure 1 to see that there is a strong inverse correlation between type and token frequency as expected. However, the correlation is not as good as it could be. Ideally, all doculects would be arranged on one line; and this line could then be interpreted as the constant amount of information in the single text translated to different languages with different morphological types.

A clear outlier is STR which is lemmatized Classical Greek (Strong's numbers,⁸ see Dahl 2007). Lemmatizing means stripping away all inflectional information. All word-forms are replaced by citation forms of their lexemes or by numbers pointing to a list of lexemes. Accordingly, STR has lost all of the grammatical information contained in Greek inflectional morphology. It has the token frequency of a synthetic language (actually exactly the same as Classical Greek [grc]), but at the same time the low type frequency of an analytical language. However, STR is not the only data point disturbing the inverse correlation. Basically there are four major

kinds of reasons for the deviations. They are briefly introduced here and further discussed below:

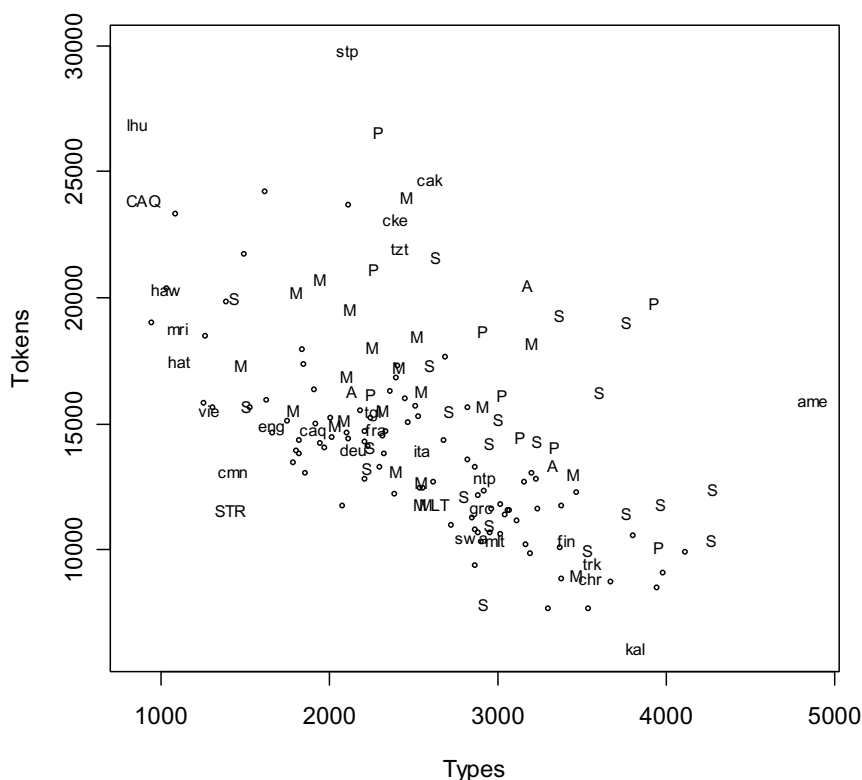


Figure 1. Type-token diagram: Gospel according to Mark with 168 doculects (The abbreviations are explained in the text, every label with letters is referred to below, dots are used for all other doculects not explicitly discussed in the text).

(i) What is measured is not languages, but languages written in particular orthographies. Deviations result from the fact that these orthographies do not follow the same principles (“word” viewed as the string between two spaces is not the same kind of unit in all texts).

(ii) Translation does not lead to full equivalence of texts. There are more elaborate translations containing “more information” and these are closer to the top-right corner.

(iii) It is wrong to believe that the same text in different languages contains exactly the same amount of overt structural information. Situations

where “the same” grammatical information is always there – such as case and possession in function words as in (1a) and in morphemes as in (1b) – is the exception rather than the rule. Languages differ in the frequency and kind of grammatical meanings that have to be marked overtly.

(iv) Considering type frequency in a parallel text as a measure of degree of synthesis rests on the assumption that the number of lexemes is cross-linguistically constant whereas languages only differ in the number and kind of inflectional categories. However, the lexicon is structured differently across languages and this disturbs the picture.

There is clear evidence for all four sets of deviations. Put differently, types and tokens do measure degree of synthesis, but at the same time they measure a bunch of other things as well. Let us discuss some examples.

(i) *Orthography*: Southeastern Tepehuan [stp] and Northern Tepehuan [ntp] (Uto-Aztecan; Mexico) are closely related, but the latter is considerably more synthetic (Bascom 1982). However, Figure 1 grossly distorts the difference because in the SE Tepehuan translation inflectional verbal prefixes are written as words which clearly deviates from the practice of virtually all other orthographies (and from the orthography in the grammar by Willett 1991).

Vietnamese [vie] is known as a language without any inflectional morphology, thus the question arises as to why there are a couple of doculects with less types in Figure 1. Of these Lahu [lhu] (Tibeto-Burman; Myanmar) is the most extreme case. Lahu actually has a small number of suffixes (Matisoff 1982: 16; e.g., *-ò* ‘change of state’ and *-e* ‘directional’), so it is in a way more synthetic than Vietnamese. But it is written in a writing system where every syllable is a word (and there is good evidence that this is actually the phonological word in Lahu). Thus many English concepts correspond to long sequences of Lahu orthographic words (e.g., *là' šɛ ð qhɔ lo chí à'* ‘hand shaft NPREF inside LOC rise deliver > deliver’; note that the dictionary by Matisoff 1988 considers *là'-šɛ*, *ð-qhɔ* and *chí-à* as compounds, reducing the number of words in this example from seven to four). Add to this that Lahu has a very restricted phonotactic inventory of possible syllables. The label CAQ in Figure 1 stands for Car Nicobarese [caq] divided into syllables. In Car Nicobarese orthography all syllables are marked by hyphens. Thus, Car syllables may serve as a baseline for localizing syllables instead of words in the diagram. Figure 1 shows that Lahu is even below that baseline.

In Maltese the definite article is separated by a hyphen from following nouns and, similarly as in Italian and French, fuses with some preceding

prepositions. Maltese articles and prepositions are clitics (syntactic words prosodically dependent on a host). Clitics are intermediate between word-forms and morphemes and are treated very differently across orthographies in different languages. Since the Maltese definite article is frequent and fuses with several frequent prepositions, it makes a big difference for synthesis whether articles are considered words [MLT] or morphemes [mlt], especially in terms of ranking order, since there are many doculects between MLT and mlt in Figure 1. If the Maltese hyphen is replaced by space and articles thus are counted as word-forms of their own, Maltese is much more analytic than in standard orthography.

Tepehuan, Lahu, and Maltese are just three examples for different kinds of problems with orthography.⁹ Now it might be argued that all these problems would disappear if all texts were written in a consistent way with grammatical words separated as in spoken languages. However, there is nothing separating words in spoken language, so that for every language many decisions must be taken by linguists, and especially for clitics and compounds there is no agreement how to treat them. As Haspelmath summarizes (2002: 162) the relevant discussion in a morphology textbook “Clearly, morphology and syntax are different, but the question of whether the difference is minor or gradual or major and sharp will probably be debated for a long time to come.” Strictly speaking, measuring synthesis presupposes that this debate has already been solved. Nevertheless, measuring synthesis can contribute to that debate by showing where the big differences are when different solutions are adopted.

(ii) *Translationese*: As pointed out by de Vries (2007: 154) many Bible translations for minority languages after the Second World War (especially in New Guinea, Australia and South America) – with their missionary purpose – are meant as stand-alone texts. Accordingly they contain many explicative elements which make the texts longer. An example for a particularly elaborate translation is Yanesha' [ame] (Arawakan; Peru). In Figure 1 all South American [S], Papuan [P], Australian [A], and Mesoamerican [M] doculects appear with one letter labels if not explicitly labeled with three-letter codes. From that it becomes clear that the inverse correlation of type and token frequency would be considerably stronger if the Oceanian and South American doculects were removed. Whether the effect is due entirely to translation style or partly derives from continental macro-areal structural differences cannot be determined here. Note that one of the major advantages of the Bible translation is that languages from these continents can be included at all in such a parallel text study.

(iii) *Different grammatical categories*: Example (1) suggests that Finnish and English express the same grammatical categories case and possession, which are only realized differently, i.e. either morphologically or syntactically. However, languages greatly differ in the kind and frequency of grammatical categories expressed. This effect can be best exemplified with articles which have been extended in use to general noun phrase marker. In the Mayan languages Central Cakchiquel [cak], Eastern Cakchiquel [cke] and Western Tzutujil [tzt] the article *ri*, *ri*, *ja* accounts for a large number of tokens (3815, 3758, 3040, respectively, as compared to 875 tokens for *the* in English). This is not the whole explanation why these Mayan doculects have an exceptionally high token frequency, but it explains part of the deviation. Tagalog [tgl] (Austronesian; Philippines), for instance, has highly grammaticalized noun phrase markers as well (with 2967 tokens for *sa* ‘oblique’, *ang* ‘topic’, *nan* ‘non-topic’, *si* ‘person name topic’, and *ni* ‘person name non-topic’ in total), but is much more in line with European doculects than the Mayan languages. A further example is Wik Mungkan [wim] with a set of frequent discourse clitics without any obvious counterpart in other languages. On the other hand, there are East and South East Asian languages, such as Mandarin Chinese [cmn] and Vietnamese [vie], which are known for an exceptionally low frequency of their function words given their analytic character. This moves those doculects toward the bottom-left corner of Figure 1.

(iv) *Inventory of lexemes*: Lemmatized Classical Greek [STR: Strong’s numbers] can be considered a baseline for the average number of lemmata to be expected. Interestingly, some doculects have fewer word-forms than Greek has lexemes, and not only Lahu [lhu] with syllable-type orthography. A restricted lexical inventory has to be expected especially for creoles such as Haitian Creole [hat]. Another potential reason for exceptionally small inventories is extensive homonymy in languages with small phoneme inventories as it is characteristic for Oceanic languages, such as Hawaiian [haw] and Maori [mri]. The effect is enforced by orthography where vowel length and glottal stop are not usually marked.

Finally, it is easily understandable from Figure 1 that the type-token ratio is the better measure for degree of synthesis than either type or token frequency in isolation. Token frequency is highly sensitive to the frequency of the most frequent type(s) and this is highly variable cross-linguistically. However, in considering type-token ratio it is taken for granted that there is a strict inverse correlation between number of types and number of tokens in a parallel text, which holds true only as a tendency.

Of course, there are many more methods of indirect measurement of degree of synthesis (none of them working well anywhere but in parallel texts). Juola (2008) uses the ratio between zipped and uncompressed text size and Popescu et al. (2009) use trigonometry in type-token diagrams.

4. Level one: Prefixing and suffixing, and refracting synthesis

4.1. Concatenative morphology

Considering morphemes as basic units of internal word structure presupposes that there is a one-to-one relationship between lexical and grammatical meaning components of word-forms and strings of phonemes. However, even though it is not always possible to segment word-forms into lexical and inflectional substrings, lexical and grammatical meanings are certainly not randomly distributed across the phonemes of word-forms: there is a high degree of iconicity in all inflectional languages in the sense that different segments within words express different components of meaning.

Concatenative morphology is a simplifying model of word structure assuming full isomorphism between form and function. Each phoneme is either part of a lexical or of an inflectional string. Suprasegmental phonology is disregarded. Further, it is assumed that there is always exactly one lexical string in each word-form (the stem) and that grammatical strings (if any) precede (prefix) or follow (suffix) the stem. In this model, synthesis can now be refracted into two components: prefixation and suffixation.

Even though it is not fully accurate to account for word structure, concatenative morphology has the advantage that it underlies heavy constraints. It can more easily be cracked by “men-from-Mars”, put differently, it is useful for indirect measurement – and possibly as a first step of analysis in an algorithmic processing chain to analyze morphology in all of its relevant features. An advantage is that if it is known which part is lexical (the stem), the inflectional parts (affixes) are obtained automatically by subtracting the stem from the word-form (and vice versa, if the affixes are known, the stem can be obtained for free).

In compiling indices for affixation there are two options: start identifying grammatical affixes directly (as done in Dryer’s 2005a approach based on reference grammars¹⁰) or first identify the stems. Proceeding by way of the lexical strings has several advantages: (i) they are subject to stronger constraints: each word-form can be expected to contain exactly one stem;

(ii) they can more easily be accessed by way of distribution across languages since the number of corresponding grammatical forms in a grammar domain is subject to much more variation on average than the number of lexemes per lexeme domain; and (iii) stems are subject to less formal variation (complete allomorphy and suppletion) than grammatical markers, and can thus more easily be identified by simply finding identical strings in all word-forms used to express a particular category. What will be discussed in the following section is a general algorithm how prefixation and suffixation can be measured in parallel texts if the lexeme domains in at least one language are known.

4.2. Global indices for prefixation and suffixation

Affixation can be measured as a by-product of automatic lemmatization in parallel texts. This section gives a summary of the four subsequent steps in the procedure of measuring prefixing and suffixing indirectly. The mathematical details of the concrete algorithm implemented in the Python program extracting the affixes are glossed over. The four major steps are the following: (i) extraction of forms in a lexeme domain, (ii) grouping of extracted forms into sets with a shared stem, (iii) detection of recurrent prefixes and suffixes, and (iv) calculating typological indices.

A *lexeme domain* is the set of contexts which are expected to be expressed by forms of a lexeme (and hence differing only in grammatical morphology) in any language. A practical problem is that lexeme domains are not congruent cross-linguistically. However, an astonishingly good approximation to lexeme domains is the distribution of lexemes in one particular language used as trigger for identifying lexeme domains of other languages in parallel texts. The effect of the trigger language will be discussed below.

An easy approach to implement step (i) goes as follows: (a) Assume that lexical domains are always expressed by one word-form only. This is mostly the case, but some phrasal expressions and cases of multiple exponence are lost, such as French *ne...pas* for negation (the algorithm will find either *pas* or *ne*), (b) Find the best equivalent for the lexeme domain as defined in terms of the set of contexts where it occurs by means of a collocation measure, such as Dice, t-score or log-likelihood (see, e.g., Manning and Schütze 1999: 151–189; Dahl 2007; Wälchli 2011) and add this form to the set of extracted word-form types, (c) Subtract the contexts accounted for by the extracted form from the lexeme domain and repeat (b) with that smaller

distribution while prioritizing forms which are phonologically similar to those already in the set of extracted forms. Apply (c) recursively until the collocation measure falls under a certain threshold where it is unlikely that the best form should be considered a reliable member of the set.

Table 1 lists the forms that are extracted in four doculects in the lexical domain defined by the Classical Greek lemma *ánthrōpos* by recursively finding the best equivalent as long as the measure does not fall below a certain threshold. In Table 1 step (ii) has already been applied: the forms are grouped according to the most likely candidates for stems (italics). Candidates for prefixes and suffixes are then all strings left if the stems are subtracted (not in italics in Table 1) and these are counted as affixes if they are recurrent, i.e. occur with more than one stem across all the lexeme domains surveyed. This step can be shown in Table 1 only with English -'s which is a recurrent suffix with the two stems *man* and *men*.

Table 1. Forms extracted with the Greek lemma *ánthrōpos* (Strong's number 444, 553 tokens in N.T.)

ENGLISH

man: *man* 336 [tokens] *man's* 9

men: *men* 186 *men's* 3

HUNGARIAN

ember: *ember* 170 *embernek* 104 *emberek* 85 *embereknek* 36 *embert* 40 *emberektől* 16 *embereket* 15 *emberi* 10 *emberekkel* 5 *embereknél* 5 *emberből* 6 *emberben* 5 *embere* 4 *embernél* 3 *emberekhez* 3 ... (21 more types)

ZULU

ntu: *umuntu* 114 *yomuntu* 89 *muntu* 64 *abantu* 62 *kubantu* 38 *kwa-bantu* 20 *abantu* 11 *yabantu* 9 *ngabantu* 12 *kumuntu* 11 *nomuntu* 9 *bantu* 7 *okwabantu* 4 *kunabantu* 5 *zabantu* 8 *ngokwabantu* 3 *ngu-muntu* 5 ... (12 more types)

MAORI

tangata: *tangata* 532

There is no single unequivocal way to tell what the best stem candidates are given a set of forms with the same lexical meaning, especially since it is not known whether the forms all contain one stem or should rather be grouped into several stem sets. What is clear is that the extracted forms are highly similar in their lexical meaning. They need not belong to one lexeme though, but may rather belong to two near-synonyms. If making stem set grouping greedier than in Table 1 one could also obtain for English a single stem {m} or {n}, and if it were less greedy two stems {muntu} and {bantú} would be obtained in Zulu. In the present approach stem extraction is set at moderately greedy.¹¹

The method for affix extraction sketched here is indirect as far as the function of the affixes is concerned. There is no way to find out with this method that Hungarian *-t* is accusative, *-nek* is dative, and *-ek* is plural and that *-eknek* is a complex suffix consisting of plural and dative. But it can be assumed for this lexeme domain – without consulting a Hungarian grammar – that Hungarian has a large number of inflectional suffixes, Zulu a large number of inflectional prefixes, English some very restricted suffixation, and Maori no inflection at all in this lexeme domain.

The simplest approach to calculate prefix and suffix indices is to count the number of recurrent left and right leftovers after stem subtraction in a set of the most frequent lexeme domains in a parallel text. However, it is preferable to make some effort to first exclude domains which are rather grammatical than lexical in character, i.e., function words. For Greek 175 Strong's numbers have been selected that are lexical, occur at least five times in Mark, and yield good extraction on average. For Vietnamese simply the most frequent 200 word-forms are taken irrespective of whether or not they are function words (which is rather hard to determine in a language such as Vietnamese).

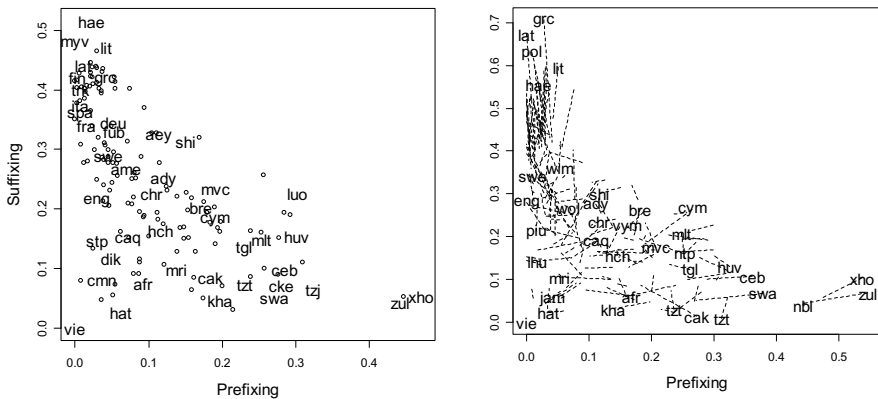


Figure 2. Prefixing (x-axis) and suffixing (y-axis) indices triggered with the 200 most frequent word-forms in Vietnamese in Mark (left) and the difference between using Classical Greek and Vietnamese as triggers (right)

Unlike Greenberg the present algorithm does not count the number of affixes per word in continuous text. There is no way our simple method can determine the number of affixes per form, it can only determine whether or not a form has a prefix and/or a suffix. For calculating the suffix index, the

extracted forms are divided in three groups: N or non-suffixed forms, R or forms with recurrent suffixes (i.e., suffixes occurring at least with two stems), and U unique suffixes. The suffix ratio is number of R types divided by $R+N$ types while U is ignored. The prefix index is calculated analogously.

The major difference to Greenberg's indices is that languages with many forms with several suffixes or prefixes per word yield lower values, and that it is important how many unaffixed forms there are. In our approach, zero marking is counted as lack of affixing. This entails that languages with zero marked nominative singular, such as *Turkish*, get lower values for suffixing than inflectional Indo-European languages, such as Classical Greek [grc] and *Lithuanian*. By the same token, *Italian* gets higher values than *Spanish* because masculine singular is *-o* and not zero for most nouns.

Figure 2 (left) shows the results for Vietnamese as trigger and Figure 2 (right) connects the obtained values for Greek and Vietnamese by dotted lines with the labels added at the Greek side of the lines. Figure 2 (right) shows that using different triggers has consequences on the magnitude of affixes extracted, but the degree of prefixing as opposed to suffixes remains remarkably stable and is thus little dependent on the trigger language. The most heavily prefixing doculects in the sample are three Bantu languages from South Africa (*Zulu*, *Xhosa* and *Ndebele*). With Greek trigger, some Indo-European doculects yield the highest values for suffixing (*Latin*, Greek, *Polish*), mainly due to better extraction with a trigger with a similar lexical structure. However, these languages get high values even with Vietnamese as trigger. The top scorer for suffixing with Vietnamese trigger is Oromo [hae] (Afro-Asiatic, Eastern Cushitic; Ethiopia).

Finally, the type-token ratio from Section 3 is compared to the number of non-affixed forms in level one where prefixed and suffixed forms have been subtracted. For this purpose the proportion of non-affixed word-form tokens with Greek and Vietnamese trigger are taken which are shown on the y-axis in Figure 3 connected by lines with the language labels added at the Greek side of the lines. The x-axis is the type-token ratio from Section 2. Figure 3 shows that the measures strongly correlate and are all variations on one theme: degree of synthesis. The level one measure has the advantage that there is an absolute boundary point for no inflection at 1.0. This is where *Vietnamese* is located both with Vietnamese and Greek as trigger (for Vietnamese trigger 1.0 by definition).

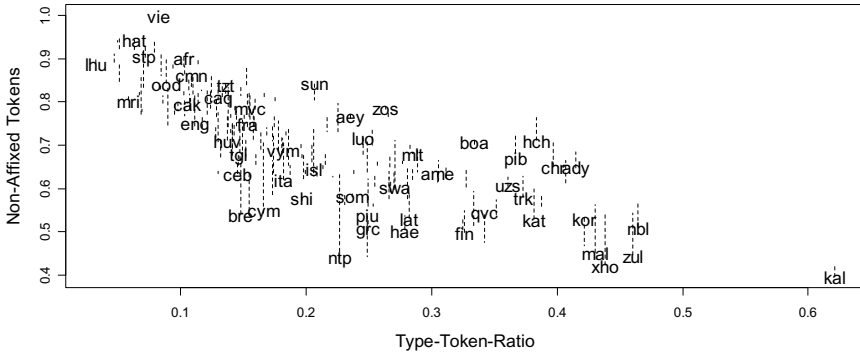


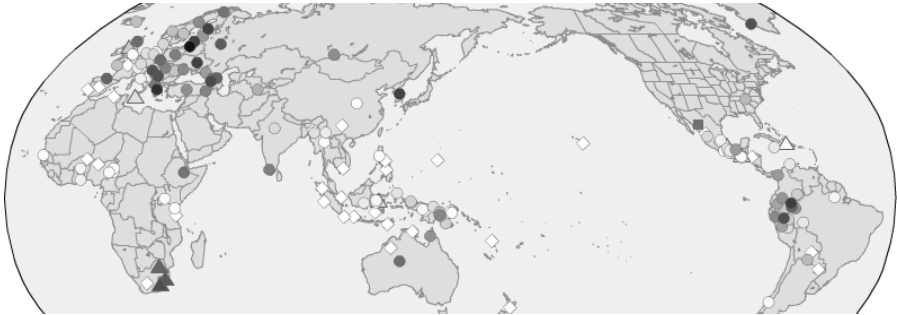
Figure 3. Synthesis measured as type-token ratio (x-axis) and as proportion of non-affixed tokens with Greek and Vietnamese as trigger (y-axis)

4.3. Case

Accessing morphological structure through the prism of lexeme domains allows us to focus on lexical subdomains where only some types of grammatical categories are expected to be expressed in morphology. In nouns the major category types to be expected are number, case, possession and definiteness. However, in proper names, the only major category type according to which word-forms are expected to vary is case. (Most texts do not contrast *my Peter* to *your Peter*, *one Peter* to *the Peter* or *Peter* to *Peters*.)¹² Proper names have the further advantage that their distribution in parallel texts tends to be more uniform across languages than that of appellatives. Extracting the correspondences for Greek *Iōánnēs* ‘John’ in Mark in Hungarian with the method presented in 4.2 yields the following forms: *jános*¹³ 14 [tokens] *jánost* 5 *jánosnak* 3 *jánostól* 1 *jánossal* 1 *jánosról* 1 *jánosra* 1 suggesting that Hungarian has at least six overtly marked cases. For Swahili, only one form *yohane* 26 is extracted, suggesting that there are no cases marked on nouns in Swahili.¹⁴ Map 1 displays the different degrees of overtly case-marked tokens in proper names for a large convenience sample measured fully automatically in parallel texts. What is measured is not the number of cases, but the proportion of tokens with affixes across twelve typical proper name lexeme domains in Mark. Measured in this way, degree of case in Hungarian is relatively limited, since, in the

example above, 14 of 26 tokens lack case suffixes. The zero marking in the nominative *János* is counted as no case.

However, the result largely meets the typologist's expectations. Case is almost always suffixing, there are very few languages with preposed case (mainly Bantu languages in Southern Africa; see also Dryer 2005b). Case mainly occurs in languages of Eastern Europe, Central Eurasia, Australia, and Peru. There is a large degree of overlap with the WALS map by Iggesen (2005) based on materials from reference grammars and counting number of cases. For a few doculects, however, things go wrong. Northern Tepehuan (Northern Mexico, dark square) is one of the rare instances where definiteness is marked on proper names as prefix and not consistently. In this language there are also complementizer clitic prefixes (that can occur on words of various word classes). The Celtic doculects behave inconsistently due to variable principles of treating onset consonant mutation in orthography (see 5 below).



Map 1. Number of case affix tokens (darkness) measured in proper names*
 *circle: suffixes, triangle: prefixes, square: mixed pre- and suffixes, diamond: no affixes

5. Level two: Proceeding to non-concatenative morphology

Here three processes of non-concatenative morphology will be discussed: infixes, partial reduplication, and consonant mutation (for internal inflection and ablaut see Wälchli 2010). Non-concatenative processes have in common that they are more sensitive to phonology than prefixes and suffixes. However, in most cases, there is a simple phonological distinction that helps us go a very long way: the one between consonants and vowels, and there are many different approaches to determine the set of vowels and

consonants in texts automatically, the simplest one being Sukhotin's (1962) algorithm.

Infixes, such as <um> in Tagalog $p<um>asok$ '<ACT:TOP.PV>enter', are first extracted as parts of affixes (actually mostly prefixes as in this example). A concatenative stem *asok* is obtained as recurrent continuous sequence in a set such as {*pumasok*, *magsipasok*, *pagkapasok*, *nangag-sipasok*, *papasok*, *pinasok*, *makapasok*, *makapapasok*} extracted in the lexeme domain *eisérchomai* 'enter'. Next recurrent sequences are searched in all prefixes (and in all suffixes). They are likely to belong to the stem if they are recurrent in all prefixes, especially if they are (or contain) consonants.¹⁵ In the Tagalog form set, the sequence *p* recurs in all forms. It is therefore likely that this must be a discontinuous stem *p.asok* (*p*. stands for the sequence *p* that is located most closely to *asok* if the sequence occurs more than once in a first order prefix). The sequences <um> and <in> are therefore likely candidates for infixes. Of course, this procedure will extract only inflectional infixes.

Inflectional partial reduplication can be illustrated with the same set of examples. Like infixes, inflectional reduplication will first be treated as an affix on level one. Repeated consonants separated by vowels within stems look as if they were reduplication, but if there is no opposition to any other form in a lexical domain, this catchy sequence does not mean anything. It is just part of a funny looking stem (as in Latin *totus* 'all' or Classical Greek *laleo* 'speak'). The following algorithm is proposed for the identification of partial reduplication:

- In all extracted forms look for sequences of $C_iV_x(V_x(V_x))C_i$ where C_i is a consonant of the same type and V_x is any vowel.
- If a form contains such a sequence, check whether the sequence is fully contained in the stem. If yes, this is no inflectional reduplication.
- If no, check whether the prefix or suffix can be accounted for by a true prefix or suffix, one that occurs with all kinds of stems, also stems not sharing a consonant with the "affix". This subtracts candidates, such as the frequent *t-et* and *n-en* in German with third singular and plural on *t-* and *n-*ending verbs stems.
- If not, this is a good candidate for partial reduplication.

In the Tagalog form set this extracts first {*papasok*, *makapapasok*} containing the sequence *pap*. This sequence is not contained in the first order stem *asok*, and neither are *pap-* or *makapap-* frequently recurring affixes across all stems. Hence this must be inflectional reduplication.

Once it has been discovered that inflectional reduplication is pervasive in Tagalog one can look for more intricate examples of reduplication, such

as reduplication sequences with infixes in them like $p<in>a\sim p$ or $p<um>a\sim p$. This can again be formulated as an implicative universal. If a language has reduplication sequences with infixes in them it also has reduplication sequences without infixes in them. As a procedural universal this means: start looking for discontinuous reduplication sequences only if there is good evidence that there are cases of continuous reduplication sequences.

The procedure for *consonant mutation*, as it is frequent in Celtic languages, is similar to discontinuous stems but without any intervening affixes. Taking the four Breton forms extracted in the lexical domain *adelphós* ‘brother’ {*breur*, *vreur*, *vreudeur*, *vreudeur*} yields a first level stem *reu*. The prefixes, however, are likely to contain some stem information, if they all end on (or entirely consist of) a consonant or consonant sequence. This applies especially if the consonant alternation – here $b:v$ – is recurrent in different lexeme domains (also *bras:vras* ‘much’; $m:v$ recurs in *mamm:vamm* ‘mother’, *mat:vat* ‘beautiful’, *menez:venez* ‘mountain’; in all these cases the first level stem has no initial consonant: *amm*, *at*, *enez*), and especially if these first order prefixes do not tend to occur with any other stems where they are not part of a consonant alternation.

These are just three examples of how one might further proceed to extract more complex morphological processes by starting out from a simplistic model of concatenative morphology. Since non-concatenative morphology is more dependent on phonological cues than first level morphology, the performance of the automatic analysis is increasingly dependent on phonological orthographies.

6. Conclusions

As shown already by Greenberg, it is not sufficient in morphological typology to classify languages into a small number of discrete types. Rather typology should engage in measuring features on continuous scales in texts. However, when done all manually, text typology is very costly in large samples of languages. Therefore advancement in morphological typology will be highly dependent on establishing indirect methods of measurement. These have the advantages that they can be applied fully automatically and that measurement is replicable.

It has been shown in this paper that morphological typology provides much potential for methods of indirect measurement. It has further been argued that indirect measurement in morphological typology is particularly

useful if it uses semi-analytic approaches where part of the word structure is analyzed automatically. Partial analysis is indispensable because it is difficult to interpret measurements otherwise, and it is indispensable to refract morphological complexity into its underlying subcomponents.

Analysis can be done more easily if there are some semantic cues based on distribution of lexeme domains. It has been shown that such distributional cues are available in parallel texts where at least one text is lemmatized (at the cost of some ethnocentrism entailing better extraction with languages structurally similar to the trigger language). Typology can thus be viewed as a by-product of morphological analysis in a text-to-device approach.

However, there are also many caveats that must dampen our enthusiasm for indirect measurement in morphological typology. The method is highly dependent on orthography (and an invitation to study the interaction of morphological modeling and writing systems more carefully). Parallel texts are an easy place to start, but in the future one should also start thinking about possibilities to use parallel texts as keys to original texts.

Indirect methods of measurement are certainly not the solution for all problems. But they are an important tool for different approaches to empirical linguistics. However, it is important to remain explicitly aware of their indirect character, which always entails that there is an underlying set of assumptions about strict correlations between the thing measured and the thing that cannot be measured. The results of indirect measurement only hold to the extent these correlations exist. The investigation of expected and unexpected correlations, in turn is highly revealing for a better understanding of the constraints restricting the diversity of human languages.

Notes

1. I am grateful to Andrea Ender, Adrian Leemann, Thomas Mayer and two anonymous reviewers for many useful suggestions. While writing this paper I was funded by the Swiss National Science Foundation (PP001-114840).
2. The examples are from the Gospel according to Mark 6:1. This is why there is *country* in the English text (American Standard translation) and ‘city’ in the Finnish text. ACT:TOP actor topic, 3 3rd person, ILL illative, M masculine, NPREF noun prefix, LOC locative, POSS possession, PV perfective, SG singular
3. For a recent renaissance of Greenberg-inspired measures in morphological typology see, for instance, Kortmann and Szmrecsanyi (2011).

4. The sample consists of the following doculects: Adyghe [ady], Afrikaans [afr], Albanian, Amele [aey], Ampeeli, Amuzgo (Guerrero), Apalai, Apurina, Armenian, Bana, Barai, Basque, Bicolano, Bimoba, Bora [boa], Breton [bre], Bukiyip, Burarra, Cacula, Cakchiquel (Central [cak] and Eastern [cke]), Car Nicobarese [caq], Cebuano [ceb], Chamorro, Chechen, Cherokee [chr], Chinantec (Lealao, Ozumacin, Quiotepec, and Sochiapan), Croatian, Czech, Danish, Dinka [dik], Duruma, Dutch, English (Early Modern [eng] and Middle), Estonian, Ewe, Finnish [fin], French [fra], Ful (Adamawa) [fub], Gagauz, Georgian, German (Standard [deu], Swabian, and Bernese), Greek (Classical) [grc], Greenlandic (Western) [kal], Guanano, Guarani (Bolivian), Haitian Creole [hat], Hausa, Hawaiian [haw], Hindi, Hmong, Huave [huv], Huichol [hch], Hungarian [hun], Icelandic [isl], Indonesian, Italian [ita], Jacalteco, Jamaican [jam], Javanese, Jivaro, Kabyle, Kaili, Karo Batak, Khasi [kha], Korean [kor], Kriol, Kuna, Lahu, Latin [lat], Latvian, Lhaovo, Lithuanian [lit], Liv, Longuda, Low Saxon, Luo [luo], Ma'anyan, Makassar, Malayalam [mal], Maltese [mlt], Mam (Central) [mvc], Mandarin [cmn], Manx, Maori [mri], Mapudungun, Mataco, Mazatec [vym], Mentawai, Mixe (Coatlan), Mordvin (Erzya) [myv], Mouk-Aria, Nahuatl (Northern Puebla and Tetelcingo), Nakanai, Nalca, Ndebele [nbl], Ngalum, Norwegian, Oromo [hae], Ossetic, Otomi (Mezquital, Queretaro, and Tenango), Pamona, Papago [ood], Pintupi [piu], Polish [pol], Portuguese, Quechua (Cajamarca) [qvc], Romani, Romanian, Russian, Saami (Lule and Northern), Scots Gaelic, Secoya, Shipibo [shp], Slovene, Somali [som], Sougb, Spanish [spa], Sundanese [sun], Sutsilvan Romansh, Swahili [swa], Swedish [swe], Tagalog [tgl], Tangoa, Tapiete, Tepehuan (Northern [ntp] and Southwestern [stp]), Ticuna, Tiddim, Timorese, Tobelo, Tol, Turkish [trk], Tuvan, Tzutujil (Eastern [tzj] and Western [tzt]), Ukrainian, Uma, Ura-ri-na, Usarufa, Uzbek, Vietnamese [vie], Wayuu, Welsh [cym], Wik Mungkan [wim], Wolof [wol], Xhosa [xho], Yagua, Yaminahua, Yanesha' [ame], Yine [pib], Zanniat, Zapotec (Ozoltepec and Quiquitani Quieri), Zarma, Zoque [zos], Zotung, Zulu [zul].

As can be seen from this list, the sample is strongly biased toward Europe, but also languages from Mexico and Peru are overrepresented. Languages from Africa, North America, Australia, and Russia are underrepresented.

5. All three letter codes are from the ISO 639-3 standard.
6. Greenberg's index has one clear advantage over the type-token values: there is an absolute lower limit at 1.00 (there cannot be more word-forms than morphemes) which means "completely analytic". There is no type-token value that means "completely analytic".
7. A further problem not addressed in this contribution is that different parts of language structure can exhibit different degrees of synthesis. German has a more synthetic noun whereas Italian has a more synthetic verb.
8. These numbers are annotations added to a Bible text following a system devised by James Strong in the 19th century. Every number corresponds to a Greek lemma in the N.T. (Hebrew in the O.T.).

9. There are more obvious problems, such as French [fra] which makes much more morphological distinctions in orthography than in the spoken language.
10. A possibility without indices is selective measurement. Bickel and Nichols (2005) measure the inflectional synthesis of verbs by counting the categories in the maximally inflected verb form.
11. The best stem candidates are extracted recursively until all forms have been assigned to a stem. In the current version implemented here, the best candidate has the highest value for t/l where t is the sum of all token frequencies plus one of all word-forms containing the form string of the candidate and l is the number of letters of the form-string. If t/l is replaced by t' , length becomes a much more important factor and longer stem candidates are preferred, which makes the algorithm less greedy.
12. It may happen, however, that proper names, especially borrowed proper names, have a deviant behavior concerning case. An example is Greek *Mariam* which is not inflected (does not happen to occur in the Gospel according to Mark). However, in practice this effect has no major influence on the results.
13. These forms are not capitalized since the program treats all letters as lower case. Otherwise the same word-form at the beginning of a sentence would be a different type.
14. Actually Swahili has three local cases marked only on attributes. The method is too crude to discover those. Neither can case be detected if it is distinguished only in articles or any other separate word-forms.
15. Vowels are not distinctive enough; it may be mere coincidence if a vowel happens to recur in all prefixes.

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Is a syntactic dialectology possible? Contributions from Swiss German

Claudia Bucheli Berger, Elvira Glaser and Guido Seiler

1. Why study dialect syntax?

There is no doubt that syntax has been the most neglected linguistic subsystem in classical dialectology although there have been several serious attempts by dialectologists to establish dialect syntax as a relevant and interesting research area (Weise 1909; Sperschneider 1959; Hodler 1969; Patocka 1989, Tatzreiter 1989; see Glaser 1997).¹ In a pioneering paper from 1994, Iwar Werlen not only acknowledges the importance of dialect syntax for both dialectology and theoretical linguistics, but he also outlines a research program for the exploration of Swiss German syntax which turned out to be remarkably fruitful. Werlen's (1994) approach is unusual in yet another way: Whereas dialectology remained largely innocent with regard to advances of modern theoretical linguistics (and vice-versa), Werlen argues that questions of syntactic theory shed new light on 'raw' phenomena which so far remain understudied, and at the same time a deeper examination of dialectal syntactic structures may help in finding answers to questions of rather theoretical, general relevance.

Just how pioneering Werlen's thoughts from the early 1990s were, becomes evident if we take into account how much the situation has changed within the last twenty years. In several European countries large-scale surveys of the geographical structure of syntax have been compiled (the earliest survey projects stemming from Northern Italy, Lower Bavaria, The Netherlands and Belgium, Great Britain and Switzerland, all starting around the year 2000; cf. www.dialectsyntax.org, 'Network', for more information on these and other, more recent projects; see Kortmann 2010 for a recent overview of the field). It is interesting to note that the theoretical impetus comes from two opposing sides, which, however, share their general-linguistic orientation: generative syntactic theory on the one hand, and (functional) linguistic typology on the other.

In the present paper, we will first discuss the conceptual question as to why *dialect* syntax should be studied after all, and why a great proportion of ongoing research has a clear *dialect-geographical* focus. We will then discuss methodological issues of data collection, referring to our experience based on the exploration of Swiss German dialect syntax (Section 2). We conclude with a few remarks on the cartographic presentation of the results (Section 3).

Dialectologists' innocence vis-à-vis developments of modern linguistic theory has not been restricted to syntax, the formidable tools of generative grammar or the incorporation of typological generalizations. As for phonology, the basic principles of structural phonological theory were laid out by Trubetzkoy in 1939 already. Despite the fact that many of Trubetzkoy's ideas are prefigured in the dialectological work by Winteler (1876), the potential of the structuralist method for dialectology was still an open issue in 1954 when Uriel Weinreich published his ground-breaking article *Is a structural dialectology possible?*, a question to which Weinreich's answer is a clear "yes". From the point of view of general linguistics, it is surprising to note that during (and after) Weinreich's times it was seemingly not obvious that dialects should be a legitimate and relevant object of serious linguistic study. For the central design features of language (Hockett and Altmann 1968) underlie, of course, *all* natural languages, spoken or written, high or low in prestige, wide-spread or local. As Weiß (2001) points out, dialects can be seen as even 'better' natural languages as compared to written standard languages since dialects are relatively free from arbitrary codifying interventions. They are acquired as first languages without formal instruction and the result of naturally occurring language change.

Interestingly, the impetus for an increased interest in dialect syntax stems not so much from the classical modern language disciplines but rather from general linguistics: generativism on the one hand, and typology on the other. As for generativism, the study of dialect variation made it possible to determine more precisely the nature of syntactic parameters since dialect variation presents us with the smallest possible contrasts between otherwise very similar grammars, although it is questionable whether a specialized set of 'microparameters' should be introduced into the linguist's toolkit (Kayne 2005: 7; De Vogelaer and Seiler, *forthc.*). From the typological perspective, the interest in dialect syntax is twofold. As for typology, we note that the description of the typological landscape of Europe has been biased in favor of the codified standard varieties. The inclu-

sion of vernaculars is a necessary corrective which will be discussed in greater detail below.

However, the late discovery of dialect syntax is not only due to dialectologists' general reservation against modern structural linguistics, but also, and paradoxically, due to progresses in spoken language research (at least as far as German is concerned). Still Löffler (2003: 110–113) seriously questions whether there are genuine dialectal syntactic rules at all, arguing that syntactic properties often attributed to dialects, in fact, reflect just deviations commonly found in spoken registers in general. The issue is discussed by Lötscher (2004) and Louden (2005). Both authors agree in their acknowledgment of genuine dialect-specific syntactic rules. Lötscher starts from well-known patterns of spoken syntax which he accounts for by reference to syntactic 'epi-rules' (2004: 157) modifying a more basic structure. He then convincingly shows that at least a significant proportion of these seemingly general strategies of spoken syntax are indeed specific to individual dialects. Louden (2005), in response to Lötscher (2004), argues that the idea of 'epi-rules' which are manifest in spoken language is misleading altogether: "rules are rules" (Louden 2005: 180), irrespective of their manifestation in spoken or written media; rules may be universal, language specific, dialect specific or even idiolect specific. Whereas we fully agree with Louden's conclusion that there is no linguistically relevant distinction between the underlying rule systems of written 'languages' or spoken 'dialects', we must admit that Louden does not give a clear hint as to how dialect specific rules can be detected after all: If dialect syntax is rule-governed like any other syntax, how can dialectal syntactic patterns be isolated from more general patterns, prevalent in a whole group of varieties/languages, or even be universal?

We believe that the only way of proving the dialect-specificity of a syntactic pattern is cross-dialectal micro-comparison (Lötscher's (2004) contribution is attempting precisely that). To put it differently: The only irrefutable proof for the existence of genuine dialectal syntactic rules is the discovery of syntactic isoglosses. We see in this fact the main reason why so much effort is spent to collect and analyze syntactic geolinguistic data. In recent years, the existence of syntactic isoglosses has been attested in all languages wherever an effort has been made to uncover them. Whereas the sheer existence of genuine dialectal syntactic structures is out of question now, let us just briefly note that all other kinds of results would be very surprising indeed: It is a well-established idea that phonological, morphological or lexical isoglosses are the result of (perhaps still ongoing) change

whereby an innovation gradually spreads from one area into others. If syntax were the only area of grammar where isoglosses do not exist we would be forced to conclude that syntax is immune against change and its synchronic reflex, variation. This would be a very surprising finding with no obvious linguistic explanation.

An important characteristic of the geolinguistic method applied in recent large-scale investigations is its full coverage of a particular area. Only this gives us a true chance to uncover the smallest possible contrasts between grammars, thus the minimal units of cross-linguistic variation. Moreover, full coverage of space does not lead us into the temptation of distinguishing between *a priori* 'relevant' and 'less relevant' dialects. It is often the case that certain syntactic variants are restricted to particular, relatively small areas which would otherwise easily be ignored.

Let us conclude this section with a prospect on possible impacts of the improving documentation of dialectal syntactic structures on language typology. Chambers (2004) hypothesizes that there is a set of structural traits which tends to show up in non-standard varieties wherever they are spoken, so-called 'vernacular universals'. If vernacular universals exist, the consequences for linguistic typology would be remarkable: It would mean that typological options are not equally (randomly) distributed in languages, but that they rather cluster not only in particular areas (as we know from areal typology) but also in particular variety types. We are skeptical against Chambers' proposal for three reasons. Firstly, many of the features discussed by Chambers (2004) are entirely English-specific (such as subject-verb non-concord, alveolar substitution in *-ing*, etc.). Secondly, those of Chambers' vernacular features, which are likely not English-specific (such as final obstruent devoicing, cluster simplification, multiple negation), seem to reflect very natural, unmarked typological options. We suspect that vernacular universals are just language universals. Thirdly, if cross-linguistically recurrent asymmetries in the distribution of typological options between codified standard languages and vernaculars can indeed be found, we would like to think of an alternative explanation: Assuming that vernaculars reflect typological preferences in a more consistent way, the deviating variety type, and therefore the one in need of explanation, is the codified standard language. It might be the case that 'standardversals' are at work instead of 'vernacular universals'. This perspective may shed new light on an at first glance unrelated topic, namely the areal typology of European languages. It is a widely accepted fact that in European languages structural options cluster together which are typologically rare from a

worldwide perspective, so-called Standard Average European features (Whorf 1941). European languages form a sprachbund, which means that their similarities are the result of areal convergence (Haspelmath 2001). However, this is especially true for European *standard* languages. Areal typologists have yet remained rather agnostic about the robustness of a European sprachbund at the level of spoken vernaculars (but see Kortmann 2009 on the ‘Europeanness’ of nonstandard English). If we relate the discussion of Standard Average European to Chambers’ idea of vernacular universals (which exist, if at all, merely in the form of recurrent typological standard-nonstandard contrasts), we might conclude in a very preliminary way that the Standard Average European features are properties of codified standard languages in the first place; we might expect that Europeanisms are less articulate at the level of spoken vernaculars. If this is correct, the European sprachbund is the result of common pathways of standardization rather than a matter of genuine areal convergence. Whether there is also a set of ‘Non-Standard Average European’ typological features is subject to future research.

2. Pioneering explorations of the dialectal syntax in Swiss Alemannic

In 1994, Werlen presented an astucious analysis of the malaise preventing prosperous research in dialect syntax at that time. He diagnosed that the traditional dialectologist’s methods weren’t suitable to describe syntax. Written questionnaires, the translation of orally given word lists in interviews, the reading out of texts or word lists, the so called *conversation dirigée* or the reporting of events: each one of these methods produced some results but not the desired data set for syntax (Werlen 1994: 52). He stated that the real problem was not only a methodological one but was also conditioned by the traditional dialectologist’s diachronic-documentary goal of research which was not fitting at all with the syntactician’s goal of research.

2.1. Not a purely methodological problem

Since the 1940s, traditional dialectologists – being real pioneers in gaining dialectal data at all – have focused on documenting ‘old’ or ‘special’ words and forms, hoping that some dialects of the southern part of Switzerland had preserved them because this should enhance the writing of the history

of the German language as a whole and give fruitful insights into the linguistic history of the Alemannic dialect. In the 1990s, a researcher interested in syntax and morphosyntax found himself confronted with a bulk of material left by the pioneers, containing little but at least some information on syntax or syntactically conditioned morphology.

For example, map III 263 in the *Sprachatlas der Deutschen Schweiz* (SDS) shows where a particle *la*, supposedly a shortened form of the infinitive *laa* ‘to let’, is inserted into the sentence ‘let him LA go’, i.e. the imperative verb form ‘let!’ is followed first by the clitic pronoun, second by the particle *la*, and then by the infinitive. In the central part of Swiss Alemannic this particle is always added, in the western part it seems to be optional and in the eastern part (besides the canton Graubünden) it does not occur (cf. Map 1).

Maps perfectly demonstrate what the traditional dialectologist was interested in. He was simply wondering in which dialectal zone *la* existed, how old its invention might be, if it is its presence or its absence that was expanding and if the isogloss coincided with other isoglosses. The syntactician’s questions are much more complex: She wants to know if *la* is a (pseudo-)verb-doubling or a particle introducing the infinitive, if it occurs in the present and the perfect as well as the imperative, or if the construction can contain a full NP (‘let LA the dog go’; ‘let the dog LA go’) instead of the clitic pronoun (‘let him LA go’). By the way, she wants to have evidence *ex negativo* in order to be sure that *‘let LA him go’ really does not exist. Furthermore she wants to correlate this presumed doubling phenomenon with other verbal doublings and doubling phenomena in general (see Löttscher 1993, Glaser and Frey 2007). This is definitely not what the traditional map-maker wanted to show (at his time a map was a kind of visible data base, a visually consumable slip box). At least, a modern syntactician looking at map 263 can hypothesize that there are probably three different grammars of *la* that she has to determine: the range of obligatoriness of *la* in the center zone, the kind of optionality in the western zone and if *la* really lacks in the eastern zone.

Whereas the dialect geographer was just interested in the same (small) piece of information in each of the many places of investigation, the dialect syntactician wants to explore the detailed grammar of one dialect, and then compare this grammar₁ with the grammar₂ of another dialect etc. It is clear that traditional dialect geographical maps can only be a starting point for modern syntacticians, not the goal (see part 3 for modern geographical mapping of dialectal syntax).

In the 1990s, Werlen's view was that, in (dialectal) syntax, a deductive approach is necessary (1994: 53): a theory establishes a phenomenon as relevant. The relevant facts cannot be gotten from a simply descriptive collecting of rare or special phenomena, but they have to have been tested theory-driven (whatever the theory on syntax or the hypothesis on a variable may be). Concerning the geographical treatment of dialectal syntax, he forecasted that not only single variables should be localized, but syntactic rules or principles (depending on the theory) (1994: 54). He emphasized that a theory should be able to predict also minimal dialectal differences because such differences should also be compatible with Universal Grammar (for the present-day discussion of this point see part 1).

2.2. Data collecting methods

Concerning the question how syntacticians should gain their dialectal data, Werlen resolutely argues against corpus analysis (1994: 52). Though he thinks that this method is suitable for the examination of those parts of grammar that contain small and closed inventories, such as phonology or a part of morphology, he argues strictly against the application of this method to syntax. Syntax is a matter of rules and predictions on the grammaticality of sentences. Werlen (1994: 56) considers the competent speaker's judgment on a sentence the only way of data collection in syntax. He thinks that it is characteristic of works on dialectal syntax that they are often written by researchers who are native speakers of the dialect concerned or who know their informants closely (1994: 71).

Inspired by many of such outlines which appeared at this time (Patocka 1989, Werlen 1994, Glaser 2000) and by Gerritsen (1991), an atlas containing syntactical maps, the three authors of this paper devised a plan for the most extensive attempt to collect syntactic data on Alemannic dialects, the project 'Dialektsyntax des Schweizerdeutschen', from 2000-2006, at the University of Zurich (Switzerland) (see Bucheli and Glaser 2002). Given that Werlen's ideal of introspection by the researcher him-/herself is not feasible if one wants to examine Swiss Alemannic dialects in 300-400 different places, the three authors of this paper invented what we retrospectively call 'the Zurich Written Questionnaire Method' for the exploration of dialectal syntax in space. Subsequently, the method has been applied to the investigation of dialectal syntax in Vorarlberg (Oliver Schallert, University of Marburg, cf. Schallert 2010), in the area of the Lake of Konstanz (Ellen Brandner, University of Konstanz), in Hessen (Jürg Fleischer, Alexandra

Lenz, Helmut Weiß, Universities of Marburg, Vienna and Frankfurt, cf. Fleischer, to appear) and in the Moselle-Franconian area (Tim Kallenborn, University of Vienna, cf. Kallenborn, submitted). However, it is important to note that the method is designed for the specific needs of a large geolinguistic survey, sociolinguistically embedded in diglossic German-speaking Switzerland. We suspect that the method encounters additional difficulties if used in another, e.g. *diaglossic* (Auer 2005) environment where interferences from varieties closer to the standard are highly expectable. This might be avoided by using large corpora of spontaneous speech (if they are electronically available); however, due to the limitations discussed above, corpus analysis is restricted to highly frequent phenomena, and the geographical picture gained from corpora remains very coarse (Seiler 2010: 513–514).

Firstly, we chose the written way of investigation in order to save costs and time. The disadvantage of this approach is evident: a loss of control on the authenticity of the informants' social reporting and on the moment when the informants filled in the questionnaires (problems of concentration, misunderstandings, transcription). Concerning the rest of the research design, there are much more advantages than disadvantages to the written method. Every informant was confronted with the same situation: read the instructions in Standard German, read the questions in Standard German, note answers in his/her dialect. The observer's paradox was the same for every informant. No informant was influenced by the explorer's dialect or the need of inter-dialectal situation (to adapt in the oral communication with an external explorer). The informants decided themselves when to fill in the questionnaire and how much time to spend on it.

Secondly, in order to get a more representative sample and to be able to model change, the questionnaires were filled in by several informants per place (Table 1). The informants are speakers of the local basis-dialect, still living in their place of origin, in second generation. They belong to different age and professional groups, both sexes. Thus, our sample is a much more representative group of the base-dialectal local society than the traditional dialectologist focused on², though still excluding speakers influenced by migration. The number of informants averages to 8 per place for the first questionnaire (Table 1). Having the answers to the same questions of several informants also allows testing if the written method succeeded: if only one person gives a certain answer that all the others don't, it can be interpreted as a relict, an innovation or a methodological problem.

Table 1. Statistics of filled in questionnaires (Q = questionnaire)

	1st Q	2nd Q	3rd Q	4th Q	complete set (1st–4th Q)
number of informants	3185	2921	2798	2774	2766
average per place	8.3	7.6	7.3	7.2	7.2
total of places	383	383	383	383	383
> 4 informants per place	376	373	369	370	369
number of questions	20	32	28	38	118

Thirdly, the creation of the questions was processed in the following way in teamwork: After the excerption of the relevant literature on a certain variable concerned, the three researchers based on introspection as dialectal speakers and/or asked their relatives and friends how they would translate a certain sentence. Then, discussions with friends or dialectal TV-shows were analyzed. For us, this served as a kind of ‘teilnehmende Beobachtung’ (participant observation), forming and testing our hypothesis. For our relatives and friends, this was as a typical ‘déformation professionnelle’. After this kind of consultation of reality, the trio created the questions. The sentences to be elicited had to contain

- the variable concerned,
- pan-Swiss-Alemannic words (not words restricted to one area),
- words whose combinations do not cause assimilation or introduction of optional sounds (‘Gleitlaut’) that could trouble the later interpretation,
- clear choice of the people in the context introducing the question, i.e. clear choice of grammatical person, gender, number, or case in the question itself (for more details see Seiler 2010).

Fourthly, the total of 118 questions was split into four parts i.e. four questionnaires that were one by one sent to the informants. This proceeding prevented the informants from getting tired of too many questions at a time, and the researchers could improve step by step the way of asking their questions. Some variables were only asked for by one translation question, some by one multiple choice question and some by both (testing the different results of different question types) (concerning the details cf. Bucheli and Glaser 2002).

We decided to include those phenomena which were already discussed in syntactic theory at the time (such as e.g. verb clusters, clitics, infinitive particles) but also more ‘exotic’ variables hardly ever noticed by syntacticians (such as the expletive in impersonal passives *do wird's gwärchet* (lit. ‘here becomes-it worked’), or word order in *das gfalle tät mir au* (lit. ‘this

please-did me too').³ The reasoning behind this decision is as follows: An atlas (with modern design) is a *Grundlagenwerk* (handbook), it should serve as an inspiration for new questions of theoretical relevance, questions which have perhaps not even been asked in current discussions.

Fifthly, the answers were analyzed, electronically stored and mapped (see Bucheli Berger 2008 for the technical details), a phase still going on. The detailed validity and interpretation of the 'Laiennotation' (writing by non-trained non-linguists), i.e. the answers to the translation tasks and the spontaneous notations in a multiple choice, remain problems that still need to be discussed.

2.3 The particle *la*: better documenting and change of use

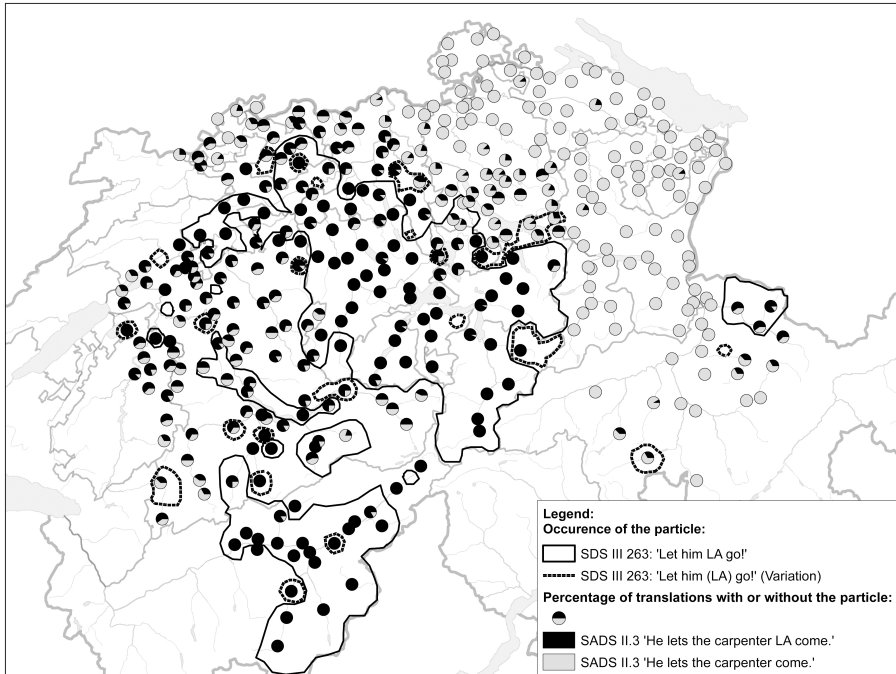
If we compare data from the SDS, explored in interviews between 1940-1958, with data from the SADS, explored by written questionnaires between 2000-2006, differences may be due either to the different method or to the real time change of the dialects investigated. A map like SDS III 263 'Let him (LA) go', showing a complex areal distribution of the presence and absence of a particle LA, is especially interesting for such a comparison (the presence of the particle may be regarded as a case of syntactic reduplication, a highly unusual construction type for a European language). The SADS made several informants per place translate the Standard German sentence 'Er lässt den Schreiner kommen' (lit. 'He lets the carpenter come'). The percentage of translations with or without the particle LA is given in Map 1.

The SDS III 263 map is redrawn in the following ways: zones where exclusively 'Let him LA go' occurred are circuted by a black line, zones with variation 'Let him (LA) go' are circuted by a black dashed line, and zones without LA ('Let him go') are not marked. Do the three syntactically different zones – we mentioned them in 2.2 – reappear in the modern data? The answer is yes, at least two of them.

A. The SDS core zone of LA-obligatoriness is rediscovered in the Centre and the Southwest (Wallis).

B. The SDS eastern zone without LA is also showing up.

This confirms the validity of the written answers to the translation tasks in the questionnaires in general. Further, if we also consider what is different, we will see that the way in which it is different is also an expected one, not a completely aberrant one.



Map 1. Comparison of SDS and SADS-data: occurrence of the particle LA

- C. The mid-western zone of the canton Berne and Fribourg, supposed to vary because of the difficult distribution of presence and absence of LA in the SDS map, reveals much more variation in the modern data. No place exclusively without LA is attested any more. We suppose that change must have happened. LA is expanding. The Standard German original sentence (without LA) obviously does not prevent the modern informants from noting the particle in the questionnaire.
- D. The northern border zone of the SDS core zone in the Center and the contingent SDS no-LA-zone show variation instead of one variant. Today, this variation zone forms a kind of a broad transition belt, from a north-western to a mid-eastern zone. This result shows either that newly both variants (the presence of LA or the absence of LA) flew in the other zone or that the SDS did not get the 'real' distribution due to its methodological and social restriction (by interviewing only one informant, a rural farmer or craftsman).

As a strategy of validation, the comparison of these methodologically different data shows that the 'Zurich Written Questionnaire Method' provided reliable data on syntax. The dialectal changes become evident: the presence

of the particle LA is expanding. The written method does not automatically implement Standard German influence on the data and the results call the sociolinguist's attention to the dialectal variation zones that may be worth of detailed examination.

3. Mapping of dialectal syntax

The final section addresses questions of data presentation. Being convinced that the geographical distribution of linguistic phenomena is a relevant fact, we consider the presentation using maps allowing for a visual perception of the feature distribution in language space the best method to present the data. The other way round, if the data do not present a geographical distribution there is no need for mapping. As for the kind of mapping technique it was the SDS which in the sixties defined a new standard by influencing subsequent atlases of German dialects.⁴ It is common belief in German dialectology that the mapping technique should be in line with the two major requirements of accuracy and clarity (cf. Naumann 1982: 673; Haas 2004). As we consider our project in keeping with the SDS, we tried to stay true to its mapping technique. Thus, we worked with symbol maps as they were introduced by Hotzenköcherle in German dialectology. Symbol maps provide a maximum level of accuracy, as they allow the allocating of the variants exactly to the location where they were explored. Chambers and Trudgill (1998: 25) distinguish between interpretative maps and display maps, and they consider the latter "by far the more common". They describe display maps as transferring "the tabulated responses for a particular item onto a map" (25). Thus, they do not distinguish between maps showing the original transcription put on the maps and maps where the responses are keyed to a symbol which is used on the map. Obviously, Chambers and Trudgill do not take into consideration the German tradition from the SDS onwards which neither encodes every elicited variant nor concentrates on the predominant responses. The point symbol maps of the SDS tradition representing the data in a classified manner should be placed somewhere in between. They represent far more simplified maps than display maps with raw data. First of all, the classification allows abstaining from information considered irrelevant in the given context. With respect to our morphosyntactic data this means abstaining from phonetic and lexical variation as can be seen in the following example.⁵

3.1. The challenge of variant reduction

The variants *zum e Billett löse* (Rheineck SG) and *zom es Billett z'löse* (Sursee LU) translating the Standard German purposive clause *um ein Billett zu lösen* ‘in order to buy a ticket’ (Q I.1, cf. Map 2) can be grouped together despite the pronunciation differences (*z[o]m*, *z[u]m*) and differences in morphology (indefinite article *e* against *es*). Such differences, including lexical ones, are not considered relevant for establishing syntactic variants.

The next step is concerned with the classification of different morpho-syntactic types, i.e. also with the possible aggregation of the answers beyond the level of pronunciation and lexis.

The difference between *z'löse*, an infinitive introduced by the particle *z*, and the simple infinitive form *löse* represents a difference in the exact connection of the purposive clause, so it could be considered relevant. Yet, since our major concern remains the difference between the connection with *zum* and another connection type with the prepositional element *für* (cf. *für n'es Billet z'lösä* Elm GL), we concentrated the majority of our focus on this difference. These two construction types are assigned to a symbol, e.g. a dash and a black dot, respectively (cf. Map 2). In principle, we could also have decided to map the distribution of four different types:

- *zum* + infinitive
- *zum* + *z* + infinitive
- *für* + *z* + infinitive
- *für* + infinitive.

The decision about more or less an extensive aggregation of variants is up to the researcher. In the present case, there are several arguments that have lead to a classification of one *zum*-variant and one *für*-variant. Whereas *für* in most cases is combined with a *z* infinitive, *z* before the infinitive constitutes a subvariant of the *zum* construction, which is chosen by nearly a third of the dialect speakers using the *zum* construction. The *zum* + *z* construction is distributed over the whole *zum* area. Including it into the map would not have contributed relevant geographic information. The existence of the *zum* + *z* type is, however, described in the commentary with respect to its geographical and quantitative distribution by mentioning all the locations where only *zum* appears. We consider the information added in the commentary sufficient to understand the type of variation. As it does not provide a geographical distribution, we prefer to leave it out of the map. The *für* + bare infinitive construction is not mapped either. In this case, it is the

very small number of occurrences (20) and the yet unclear grammatical status which motivates the same treatment. The small number of instances insinuates that *z* could have been missed by an oversight. Yet, there seems to be a concentration of *für* + infinitive used in the Valais and southern Bernese region, a distribution which could be an indication of a regional variant. The reader interested in this variant will find the information in the commentary, but the variant is not mapped separately.

It can be seen from this exposition that there are many decisions to be taken in order to compose a symbol map. Therefore it is most important to supply the atlas with an introduction and a commentary, so that everybody can trace back the decisions made in order to judge the mapping. The commentary contains information on the absolute numbers of the mapped variants and on other variants (if any). We are convinced that symbol maps meet the cartographic demands of dialect geography in a more adequate way than maps showing the raw data. The research team drawing the map certainly knows the data best and therefore the abstention from classification would as a result lead to the loss of important information. This conclusion, of course, relates to traditional dialect atlases on paper. The possible online creation of maps on the basis of raw data provided by a research team will certainly change the situation. It could be an ideal future situation to dispose of the experts' maps and provide the possibility to create online maps on the basis of one's own classification of the same data.

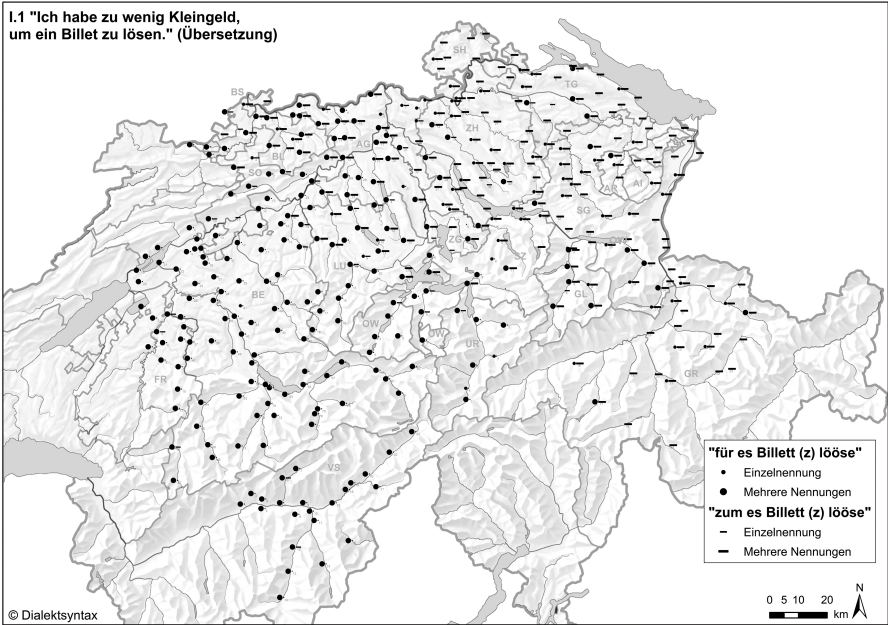
3.2. Coping with quantity

The challenge of variant reduction was not the only challenge for the preparation of maps from our data. As mentioned above, unlike the SDS enterprise we worked with several informants per location.⁶ This decision has a great impact on the mapping technique, too. The SDS maps in most cases show one symbol at a location coding the answer of one informant, at least in the case of the phonetic and morphological maps. Sometimes, however, the SDS editors were also confronted with several different answers displayed on the map with different symbols, in particular in the case of lexical maps. This could be due to intra-individual variation, especially in the case of high frequency items as well as to inter-individual variation, when there were data provided by several informants.⁷ By contrast, in our project we were quite regularly confronted with differing answers.⁸ As a consequence, we had to decide how to pass on the information concerning the proportion of the variants chosen by the informants to the user of the maps.

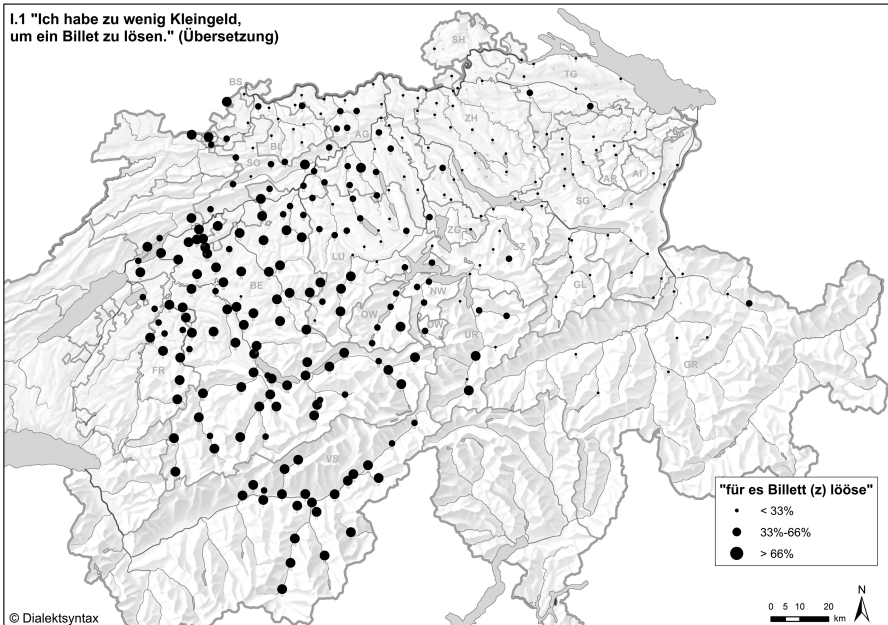
In our survey the exact number of informants varies considerably. There are locations where only one informant sent back all the questionnaires and others where more than 20 persons collaborated. In 90% of the locations (342), however, the number of collaborators was between 5 and 10. In the end, we cancelled the (few) locations with only one informant in our database. Thus, we ended up with 383 locations distributed all over German-speaking Switzerland. The choice of locations was based on the grid of the SDS locations considering the topographical situation of Switzerland. That is why the sampling grid displayed on our maps may seem unbalanced compared with atlases dividing the investigation area in a grid of equal squares.

Working with a total amount of about 3'000 informants⁹ we were prepared to find a certain number of mistakes and examples of inattentiveness among the answers. It is, however, not to be expected that several persons in one location make the same mistake. Singularly occurring answers are therefore marked as minor important answers and coded with a smaller symbol. If they are surrounded only by different symbols there is a certain probability that the singularly occurring answers are erroneous answers. We did not want to eliminate them completely because there can be phenomena where such singular occurrences indicate rare variants. Thus, a clustering of singularly occurring answers could indicate a kind of transition area or change in progress. At the moment, most of the maps prepared for the atlas exhibit this design, based on a simple distinction between singularly occurring answers and multiple answers coded in the size of the symbol, e.g. a small dot or a larger dot, cf. Map 2 (variant *für*). This mapping technique can be considered based on a special kind of – more or less arbitrary – binary numerical classification of the data.

Another obvious possibility to visualise quantity would be the (proportional) coding of the relative quantity of a variant by the varying size of the chosen symbol, e.g. a circle. There are several arguments against this procedure. First, the absolute number of answers is often too small to allow a proportional representation. This objection was also raised by Iwar Werlen when we presented our first cartographic attempts to map dialect syntactic variation in 2002. It is, however, also valid in the case of a discontinuous quantitative classification, such as with the formation of three or more cohorts, e.g. one below 33%, another one from 33% through 66% and a third one above 66% (see Map 3) or the differentiation between a preponderant use (> 50) and minor important variants.



Map 2. Infinitival purposive clause (Q I.1); construction types



Map 3. Infinitival purposive clause (Q I.1): percentage of the *für*-construction

Even if we agree that a proportional presentation conceals the possible problem of small numbers, we are convinced that single small numbers and therefore misleading proportions are balanced by the great amount of surrounding values. Nevertheless, we refrain from using quantitative maps as main maps, regardless of whether they are proportional or not. We do use them, however, as a means of supplementary data presentation in order to visualise significant differences in the quantitative distribution, or the decrease or increase in the percentage of a variant in the geographical space not being visible as the consequence of the simple binary division between singularly occurring and multiple answers. Second, quantitative differences, in particular when a proportional coding is used, are difficult to perceive on a map, especially when there are several variants mapped together.¹⁰ As we consider the geographical distribution the main motivation for mapping, we certainly prefer a mapping technique allowing for the perception of clustering in the geographical space. Third, if quantity is coded on the basis of cohorts, there is a certain amount of arbitrariness, let alone the problem of small numbers discussed above. Given all these problems, quantity based maps need some extra commentary supporting an adequate interpretation.

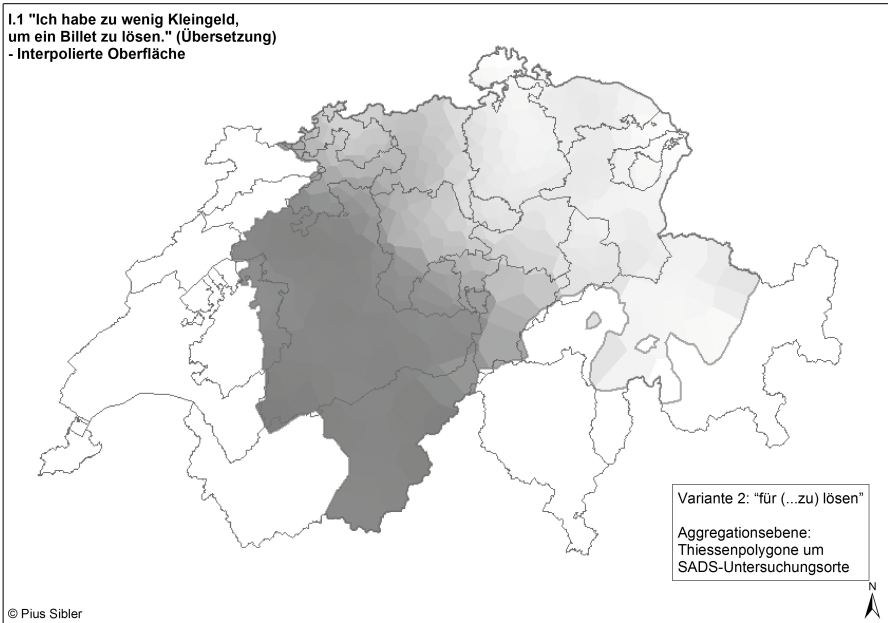
3.3. Colored symbols and color maps

Whereas traditional dialect atlases only rarely used colors, e.g. to provide additional information on the main topic of the map¹¹, several recently published atlases even use color instead of different symbols. Such examples include the World Atlas of Language Structures (2005)¹² where different feature values are symbolized by differently colored circles, and the Syntactic Atlas of the Dutch Dialects (SAND) (2005, 2008) with its colored squares symbolizing different feature values, up to eight per location in a predefined arrangement. Color is indeed an effective means of presenting the distribution of two or three variants on a map. Thus, it is very easy to perceive the areal structure of the variants. This is, however, also true with black and white symbol maps if the symbols have been well chosen with respect to visibility.¹³ Color maps very quickly reach the limit of visible discrimination which disables their use in the case of more numerous variants, whereas symbol maps are nearly unlimited in this respect. The choice of symbols, however, suitable for the visualization of feature clustering in the geographical space and likewise suitable for being located together at a certain point on the map is a challenging task. In sum, there are advantages

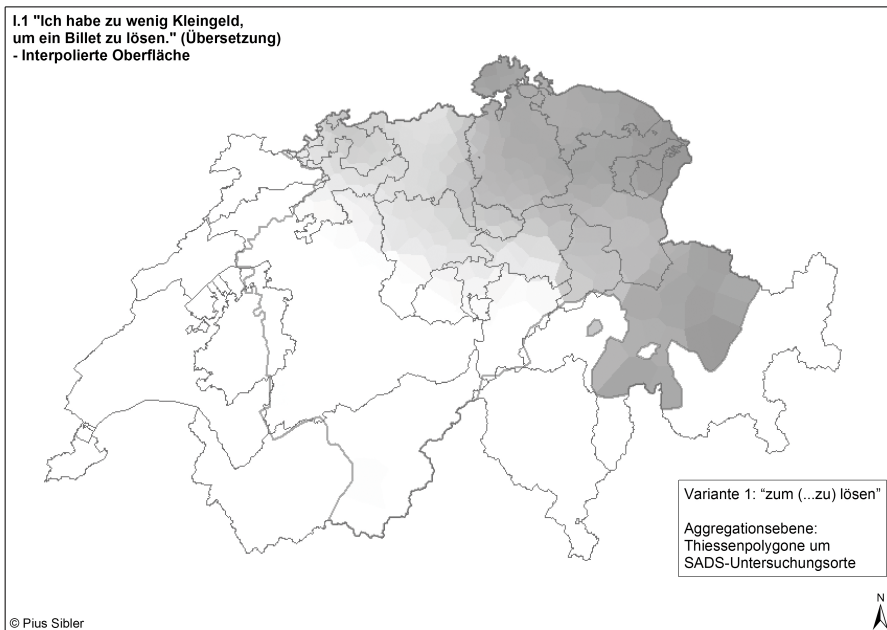
and disadvantages to each of these two methods, and it depends on what you primarily want to present which method to choose. Colored symbols no longer present such technical problems and there are fewer financial problems with respect to earlier times, meaning that one can freely choose the preferred method according to the objective. As a consequence we will integrate colored symbols in our maps where it is suitable and helpful. With respect to the use of colors the situation has certainly changed since 2005 when we invited some experts to a workshop on dialectal mapping. The majority of the invited linguists either voted against the use of colors, or gave the advice to only use them carefully. The experts from other fields, such as cartography, however, voted at least for the use of colored symbols, or else they recommended the use of choropleth maps covering the whole area and a renunciation of the exact allocation of symbols. The results of the cartographic experiments in the following years lead us to the decision to continue publishing point symbol maps, because we rate the principle of accuracy very high. Color maps help us to perceive areas of variants with a clearly distinct distribution, whereas symbol maps always seem misbalanced because of the empty space between the locations. Color maps can even visualize quantity with the help of shaded coloring (cf. Maps 4 and 5, transformed in black and white, cf. Sibling 2011). Yet they become problematic when there are several variants to be mapped together, especially if the variants overlap in their distribution. Whereas it is possible to put several symbols into a location, by using colors you get a mixture which is difficult or impossible to interpret with respect to the variants used in a certain place or region.¹⁴

There are many elaborate methods of creating color maps provided by various schools of dialectometry (cf. Goebel 2006; Heeringa 2004, 9–26) which we cannot discuss here. We also skip the question of how to get from a location to a surrounding area, which is essentially a technical problem. More important is the following: in most cases color maps are based on more abstract concepts such as difference and similarity between locations and on the aggregation of a certain amount of data. Recently, however, Rumpf et al. (2010) presented color maps based on the variants themselves. The shading of the color corresponds to their quantitative dominance over the other variants and the number of different colors codes the number of dominant variants. Sibling (2011) has created color maps based on several syntactic phenomena from our database following similar principles. On the corresponding maps (Map 4 and 5) one can see the intensity of the two types of infinitival purposive clauses (based on question I.1, as well as Map

2) with *für* and *zum*, respectively. Map 4 and 5 nicely show the distribution of the two variants, *zum* covering only the eastern part of Swiss German and *für* phasing out continuously in the east, a behavior referred to as inclined plane in Seiler (2005). On a blended map the distribution of the variants is to be seen only indirectly. A light coloring means that the variant dominates only weakly. With respect to the two syntactic variants presented here, a blended map still gives a good impression of their relative distribution in space. If there are maps with three or more variants, it can, however, happen that none of the further variants show up in the blended map. This is the case when a variant, although clustering in a certain region, is dominant scarcely anywhere, as e.g. the variants *weder*, *wie* and *wan* with respect to *als* connecting the standard of a comparison clause (e.g. *grösser weder ich* ‘bigger than I’) (Sibler 2011:44).



Map 4. Infinitival purposive clause: distribution of the *für*-construction



Map 5. Infinitival purposive clause: distribution of the *zum*-construction

This leads us to the conclusion that color maps are not suitable for an atlas which is intended to present the relevant information for all existing variants with certain accuracy. They are the result of various interpretative processes and as such interesting research tools for questions of more global and abstract character, as e.g. the similarity of dialects. They are not suited for a publication in the tradition of atlases to be used primarily as documentary research tools (Hotzenköcherle 1962: 142) which should allow a future user to develop his/her own interpretation from the data presented. In line with this goal, the SADS will contain symbol maps with a commentary accounting for the underlying data and their classification. It is not possible to present the data themselves for reasons of size and the kind of data which is mainly based on multiple choice elicitations in written questionnaires and not on transcribed interviews.

4. Conclusion

Syntactic dialectology turns out to be an innovative branch of linguistics insofar as it is in line with recent theoretical developments concerning vari-

ation in grammar. This holds true with regard to aspects of crosslinguistic comparison as well as the organisation of individual grammars. In line with the empirical dialectological intention to provide reliable data on the basis of a transparent methodology of data collection and presentation, syntactic dialectology can contribute to the foundation of a sane empirical ground of a theory of linguistic variation building the base of a general understanding of language.

Notes

1. Our own research was funded by the Swiss National Science Foundation (2000–2006).
2. Traditional dialectology preferred informants who were mostly farmers or artisans, male, not migrated for some generations, as old as possible.
3. See the list of the phenomena <http://www.ds.uzh.ch/dialektsyntax/>
4. The founders of the SDS were inspired by the *Atlas linguistique de la Wallonie* (1953–), cf. Haas (2004: 1); Hotzenköcherle (1962: 140).
5. Cf. Seiler (2005) for a discussion of the phenomenon on the basis of a preliminary analysis of the data.
6. For more details on the design of the project cf. Bucheli and Glaser (2002), Bucheli Berger (2008).
7. The SDS team mostly worked with two informants. Trüb (1989: 183) considers multiple answers a cartographic problem: “Mehrfachbelege sind, sofern man sie nicht unterdrückt [! E.G.], offenbar ein schwieriges Problem der Kartographie“. In the MRhSA survey multiple answers are rare despite several informants. The informants were asked to discuss variants in a team and evaluate them, in order to reach at the competence-based forms (“kompetenzielle Varianten”) (Bellmann 1994: 73–76).
8. It is not yet quite clear whether this is a peculiarity of syntax or only due to working with several informants.
9. The exact number varies from questionnaire to questionnaire (cf. Table 1) and from question to question, with a maximum of 3185 informants for the first questionnaire and 2774 for the last questionnaire.
10. In our online database created for teaching purposes the mapping tool allows a continuous symbolising (of one variant), but we noticed that the students preferred creating cohorts in order to support the dialectgeographic analysis.
11. Trüb (2003: 60) speaks of an additional level („eine weitere Kartenebene“) indicated by red symbols, e.g. referring to a semantic difference on lexical maps. The MRhSA uses red symbols in order to emphasize phonological or morphological differences between cohorts. The VALTS uses red symbols e.g. in order to indicate to Romance influence.

12. Cf. also the revised digital version: <http://wals.info/> Accessed on 2011-06-01.
13. For a discussion of the graphical principles of the SDS cf. Trüb (1989: 181–183). Cf. also Hotzenköcherle (1962: 142) who is convinced that a clever choice of symbols clustering on the map achieves a spatial effect.
14. As it was not possible to integrate color maps in the present volume, we refer to the map in Sibley (2011: 29) in order to illustrate the problem.

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Methods for modalities

Johan van der Auwera and Gabriele Diewald

ja mues men oder darf men oder cha me mit dir
öpis rede (Werlen 1985: 95–96)

1. Introduction

This chapter deals with the concept of modality.¹ We will show that modality is interesting from both a formal and a semantic point of view, how both form and meaning can be studied in isolation and we will also suggest that the best way is to study meaning and form together.

2. Modalities

The term ‘modality’ is used in more than one way (Werlen 1982, van der Auwera and Plungian 1998, Palmer 1986/2001, Nuyts 2006), but many linguists will agree that the meaning contributed by the word *must* and *may* in (1) and (2) is modal.

- (1) The prime minister *must* have thought about the problem.
- (2) The prime minister *may* have thought about the problem.

In (1) *must* expresses that the speaker considers it highly likely that the prime minister thought about the problem. In (2) *may* expresses a speaker judgement also, but this time (s)he considers it possible that the prime minister thought about the problem: it is not particularly likely but not unlikely either. The verbs *must* and *may* have other uses and there is a further consensus to treat at least the uses in (3) and (4) as modal too.

- (3) You *must* solve the problem.
- (4) You *may* solve the problem.

In (3) *must* expresses that the hearer is obliged to solve the problem. In (4) *may* expresses that the hearer has the permission to solve the problem. As to the relation between the uses in (1) and (2) vs. (3) and (4) opinions differ. One can be of the opinion that the two uses of *must*, respectively, *may* instantiate the same meanings, viz. necessity and possibility (e.g. Perkins 1983, Kratzer 1978) and that the difference is due to context, either linguistic or extra-linguistic or both. But one can also be of the opinion that (1) and (2) versus (3) and (4) instantiate different meanings (e.g. Diewald 1999). *Must* and *may* are then ambiguous or, if one accepts even more meanings, the prefix *ambi-* is not really appropriate and the better term is ‘polysemous’. Independently of whether one opts for monosemy or polysemy, there is a fair amount of agreement on calling the meanings or uses illustrated in (1) to (4) ‘modal’. For the distinction between (1) and (2) vs. (3) and (4) many terms are in circulation, but probably the most common ones are ‘epistemic’ for the meanings or uses illustrated in (1) and (2) and ‘deontic’ for the ones illustrated in (3) and (4).

Why have linguists been interested in modality? There are basically three reasons.

The first is purely conceptual. The question of how to define the concepts already invoked, such as epistemic and deontic modality, is not easy to answer. And more tricky still is the question how these concepts relate to one another. These are concerns about meanings only – concepts, if one likes. And note that there are many other meanings or concepts that come into the picture, whether one can call them ‘modal’ or not. (5) to (9) illustrate some of these, (5) to (7) with English *may*, (8) with the very similar verb *can*, and (9) with the German ‘may’ verb *mögen*.

- (5) *May* he live a hundred years.
 (6) Whatever he *may* say, do not believe him.
 (7) If you want to go to the zoo, you *may* take bus 25.
- (8) I *can* speak English [in the reading ‘I am able to speak to English’]
- (9) *Magst* du ihn nicht?
 may:PRS2SG you him not
 ‘Don’t you like him?’

(5) expresses a wish, which is neither a speaker’s uncertainty – the epistemic meaning – nor the expression of a permission – the deontic meaning. The

concessive use in (6) is at least very close to the epistemic meaning, but it is arguably not quite the same. In (7) *may* need not express a permission: it may just express a possibility, i.e. a possible strategy of getting oneself to the zoo. In (8) *can* expresses an ability, and in (9) *mögen* means ‘like’. All of these concepts need to be analyzed.

Second, the forms that are regularly used to express modal notions may be interesting from a purely formal point of view. This is the case in English. Most English verbs need the auxiliary *do* for negation and question.

- (10) a. I love you.
 b. I *do* not love you.
 c. *Do* I love you?

But the modal verbs typically don’t.

- (11) a. I *must* go now.
 b. I *must* not go now.
 c. *Must* I go now?

Here is another interesting formal property: *may* and *must* can only be followed by infinitives, at least in present-day English. This is different from the Dutch counterparts.

- (12) Ik *moet/mag* naar huis.
 *I *must/may* to home
 ‘I *must/may* go home.’

The third and the most important reason for why modality is interesting concerns the relation between meaning and form. Studying the conceptual relations between deontic and epistemic modality, wish, concession and ability is one thing. Studying which markers express which meanings and why is another thing. In English, for instance, *can* is very similar to *may*, but they are not quite the same. And how much variation is there between languages? English *can* is similar to Dutch *kunnen* and German *können*, but they are not quite the same. When studying the relation between meaning and form, we also find interesting questions on compositionality. Thus modal markers enter into larger modal constructions in not strictly predictable ways. Consider the combinability of *may* with negation.

(13) The prime minister *may* not have thought about the problem.

(14) You *may* not solve the problem.

(13) has epistemic *may*. When it is followed by *not*, the modal element has wide scope: (13) means that it is not certain that the prime minister has thought about the problem. In (14) *may* is also followed by *not*, but here *may* is deontic and in the resulting meaning *may* has narrow scope, at least in its default reading, without an intonation break between *may* and *not*. (14) normally means that the hearer is not allowed to solve the problem, in which case its meaning is close to that of (15).

(15) You *must not* solve the problem.

(15) has a deontic modal, too, but this time the modal has wide scope.

Another compositionality problem is that complex constructions may have modal meanings, even though their components are not in any obvious way modal. Why is it, for instance, that *have to* in (16) and *are to* in (17) express meanings close to that of *must*?

(16) You *have to* go now.

(17) You *are to* go now.

Then there is again a cross-linguistic dimension. To illustrate the latter, the Dutch counterpart to (15) has two readings.

(18) Je *moet* het probleem niet oplossen.
 you must the problem not solve
 ‘You mustn’t solve the problem.’ or ‘You needn’t solve the problem.’

In the meaning – form interface area the question of distinguishing between monosemy and polysemy becomes a crucial issue.² At what point do we say that two uses instantiate two meanings? For some constructions the question is bound to be easier than for others. For *must* and *may*, illustrated in (1) to (4), we have already alluded to the fact that monosemy and polysemy accounts exist side by side. But in the case of German *dürfen* one would more readily opt for polysemy. Consider (19) and (20).

- (19) Sie *darf* bis Mitternacht wegbleiben.
 she may until midnight away.stay
 ‘She is allowed to stay out until midnight.’
- (20) Die Zahlen *dürften* im Lauf der letzten
 the figures must:PST3PL during the last
 Monate gestiegen sein.
 months risen be
 ‘The figures probably have gone up during the past months.’

In (19) *dürfen* expresses permission but in (20) probability, the former is like English *may*, but the second is more like English *must* – two notions that are rather far apart and native speakers of German would not conceive of any relation between the two uses of *dürfen*. There is also a formal side to this difference: the epistemic *dürfen* is restricted to what is called the ‘subjunctive II’ form. This latter restriction is related to the fact that, usually, modals with an inherent permission reading (such as *dürfen*) do not acquire epistemic meaning. The meaning of the subjunctive II, however, which involves a complex indexical relation, pointing to an external condition that has an impact on the factuality value of the proposition, helps to override the inherent permission reading of *dürfen*. Thus, in the diachronic development of *dürfen*, its subjunctive II forms – in contrast to all other inflectional forms – were able to develop an epistemic reading (cf. Diewald 1999: 231–235).

Another exciting issue relating to both the meaning and the form of modality is its grammaticalization. Grammaticalization is defined as a process whereby, in the course of time, lexical entities develop grammatical functions, or where elements already displaying grammatical functions develop further or more central grammatical functions. This common core of grammaticalization studies is emphasized in the following definition:

Grammaticalization consists in the increase of the range of a morpheme advancing from a lexical to a grammatical or from a less grammatical to a more grammatical status, e.g. from a derivative formant to an inflectional one. (Kuryłowicz 1964: 52)

As in the above classical definition, grammaticalization research usually takes the perspective of the individual form (or a syntagmatic combination – a construction – of individual forms) undergoing this process. However, as this process is always concerned with a change of the basic semiotic

category of the item in question, i.e. from a symbolic linguistic sign (lexical sign) to an indexical linguistic sign (grammatical sign), grammaticalization studies are also concerned with meaning change and functional change (Diewald 2011). This complex interaction is alluded to by Lehmann:

Grammaticalization is a process leading from lexemes to grammatical formatives. A number of semantic, syntactic and phonological processes interact in the grammaticalization of morphemes and of whole constructions. (Lehmann 1995 [1982]: viii)

This general process is often described in terms of grammaticalization paths. A path applying to modal elements is given in (21a) (from Lehmann [1982] 1995: 37, simplified). (21b) and (21c) show paths from Bybee, Perkins and Pagliuca (1994: 240).

- (21) a. full verb > modal verb > auxiliary verb > mood marker
 b. desire > intention > future > imperative
 c. ability > root possibility > epistemic possibility > concessive

As a result of the intense research during the past decades, a number of facts and assumptions on (the grammaticalization of) modals have become widely accepted. Conversely, work on the grammaticalization of modal verbs has provided paradigm cases of the kinds of questions arising in the investigation of grammaticalization.

Thus we hope to have conveyed a sense of why modality is interesting. The question that will occupy us in the rest of this article is *how* one should study modality, i.e. the methodological question.

3. Methods

The methods that are necessary for the analysis of modality are not different from those employed in the study of similar domains, such as those of time (tense) or aspect. The methodology also depends on the particular issue. If one is interested in the conceptual issue, then introspection (intuition) will suffice. If one is only interested in the form of modality or in the relation between form and meaning, then there are various options. If the modal constructions are those of one's native language, then native speaker intuition will again be useful. But a language is more than a speech repertoire of one person, judgments will vary from one person to the next, and

individuals do not necessarily have a good sense of what is more or less frequent. Hence corpus study comes in, especially if one is studying diachrony.³ There are, in principle, two types of corpus approaches. One either studies comparable texts for different periods or one studies the ‘same’ text in its renderings in different periods – the comparable text vs. the parallel text methods. If one is comparing different living languages, then there are two options. Either one questions native speakers or one again studies corpora and in the latter case one can again either use comparable or parallel texts. A variant of the questionnaire method is the ‘specialist consultation’ method: often one does not have access to native speakers but only to grammarians, who themselves had access to native speakers. In consulting grammars, dictionaries or linguists, one still tries to question the native speakers, but in a most indirect way. As current corpus approaches use electronic bases and more or less automatic search tools, corpus approaches can be differentiated further in terms of the role attributed to the computer. Either the computer merely serves to find and count things faster than humans or it is allowed to undertake more complex tasks of hypothesis testing and even hypothesis formation, in which case the machine is arguably not just faster but also better than humans, at least in some respects.

Not all issues have to date been studied with all relevant methods. We do not, for instance, know of any cross-linguistic study of modality that is based on a questionnaire addressed to native speakers. In the rest of this paper we will illustrate some of the issue–method combinations. In Section 4 we illustrate the role of introspection in a ‘meaning only’ approach. In Section 5 we illustrate the role of a comparable corpus approach for a diachronic ‘form only’ issue. Section 6 illustrates studies that deal with both form and meaning. Each time we will again try to convey a sense of why the issue is interesting.

4. Meaning only: introspection

Modality essentially concerns interesting concepts conveyed through interesting forms. Maybe the earliest study of modality or at least one of the early interesting studies of modality focuses on the conceptual issues, without (much) regard of the form. The so-called Aristotelian Square, the idea but not the representation of which goes back to Aristotle⁴, is a configuration designed to capture relations between selected sets of categories and negation. One of these category sets involves necessity and possibility.

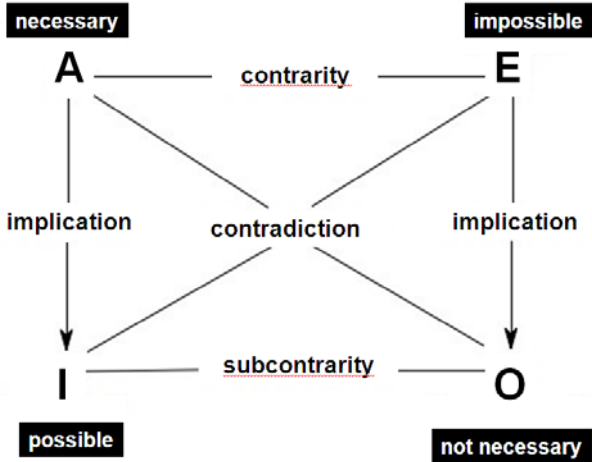


Figure 1. The Aristotelian square for modality

The A-I axis is the positive one and the letters ‘A’ and the ‘I’ are those of Latin *Affirmo* ‘I affirm’, The E-O axis is the negative one and the ‘E’ and ‘O’ are those of Latin *nEgO* ‘I deny’. The A-E axis captures the universal values and the I-O the particular ones. The universal values imply the particular ones. Thus if something is necessary, it is also possible. The values that are diagonally opposed to one another are contradictory: they cannot hold true or false together: something cannot be both necessary and not necessary and it is impossible for something to be neither necessary nor not necessary. The relation between A and E is one of contrariety, which means that an A and an E proposition cannot be true together. When something is necessary, then it cannot also be the case that it is impossible. The A and E propositions can both be false though: it is perfectly fine for something to be neither necessary nor impossible and, in that case, one would say that it is possible. The relation between I and O, finally, has been called ‘subcontrariety’. The idea is that I and O cannot be false together, but that they can be true together. This is not self-evident and it has caused problems, apparently already for Aristotle (Horn 1990: 454), but the details need not concern us here.

Issues relating to the Aristotelian Square have been discussed by logicians, philosophers and linguists from Aristotle until today (see Horn 1990, van der Auwera 1996, van der Auwera and Van Alsenoy 2011). Their method is essentially intuition. One explores concepts, their implications, the consistency of the system, and the plausibility. The important point here is that a good part of the research is not concerned with form. It does not

matter whether and how a language expresses the four concepts. Necessity will imply possibility, no matter whether necessity is expressed with the verb *must* or the adjective *necessary*. The concern is only with the conceptual relations. Of course, the starting point is form. Even for philosophers and logicians, it is only because they are aware of words like *must* and *necessary* in contrast with *may* and *possible* that the conceptual analysis will engage them. And the conceptual issues easily lead to interesting questions about form. We will come to this in Section 6.1.

It is important also to stress that the ‘meaning only’ orientation is by no means restricted to work on the Aristotelian Square. This orientation is present in the wide field of modal logic. Portner (2009) describes the goal of the latter as follows:

Modal logic is concerned with better understanding the concepts of implication, necessity, obligation, and the like, especially as they occur / in patterns of reasoning. It’s not about the meanings of the natural language expressions like *must*, *possible*, and *ought*. In fact, in doing logic we often forget about the words we normally use to express these concepts, since doing so allows us to better focus on the system of reasoning itself. (Portner 2009: 10–11)

This does not mean, according to Portner (2009), that modal logic is irrelevant for linguistics. On the contrary, as a formal semanticist, he wants his linguistic analysis to be as close as possible to modal logic in order to arrive at a ‘linguistically realistic version of modal logic’ (Portner 2009: 29).

5. Form only, one language, diachrony: comparable corpora

Can one study form independently of meaning? The answer is positive. We have earlier illustrated two formal features for English modals: the absence of *do* periphrasis and the presence of a bare infinitive. This and other features can be studied in isolation from semantic concerns. No doubt the decision to consider verbs such as *must* and *may* but not *like* and *see* as modal is essentially a semantic one. But apart from identifying the objects of the study of modality as including *must* and *may* but excluding *like* and *see*, one can focus on formal matters. Van der Auwera and Taeymans (2009) is such a study. It is furthermore a diachronic one and it is based on comparable corpora. Their formal issue is the alternation illustrated in (22) and more particularly its history.

- (22) a. She *needn't* ask me.
- b. She doesn't *need* to ask me.

Van der Auwera and Taeymans (2009: 324) argue, for British English, that *need to* was once as fond of negative polarity as *need* is now. This is shown in Figure 2: in late Middle English *need to* was predominantly positive polar, as it is now, but in early Modern English it was 100% negatively polar, the way *need* is now.

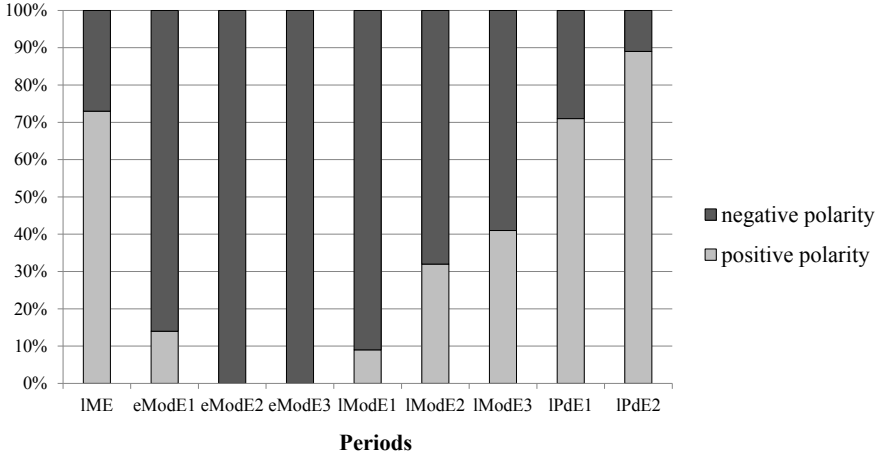


Figure 2. *need to* in positively and negatively polar contexts (IME ‘late Middle English’, eModE ‘early Modern English’, lModE ‘late Modern English’, lPdE ‘late Present-Day English’; eModE, lModE and lPdE are split up in subperiods; there are no data for early Present-Day English)

Figure 3 illustrates another corpusbased ‘form only’ claim: the absolute frequency, whether in positive or negative polarity context, of *need* vs *need to* shows a marked rise and fall of *need*.

Their findings are based on research on corpora deemed representative – and therefore comparable – for the relevant states of the English language. The computer has a minor role. It serves as a machine for fast finding and counting. The study only deals with form: nowhere in this study do the authors discuss whether or not the patterns illustrated in (22) are perhaps not quite synonymous. That the two *need* verbs are not synonymous is not denied either (see e.g. Duffley 1994, Duffley and Larrivéé 1998 for some interesting proposals), but the study by van der Auwera and Taeymans (2009) abstracts from this issue. As such, though, these tables may thus only show part of the story: what steers the developments visualized.

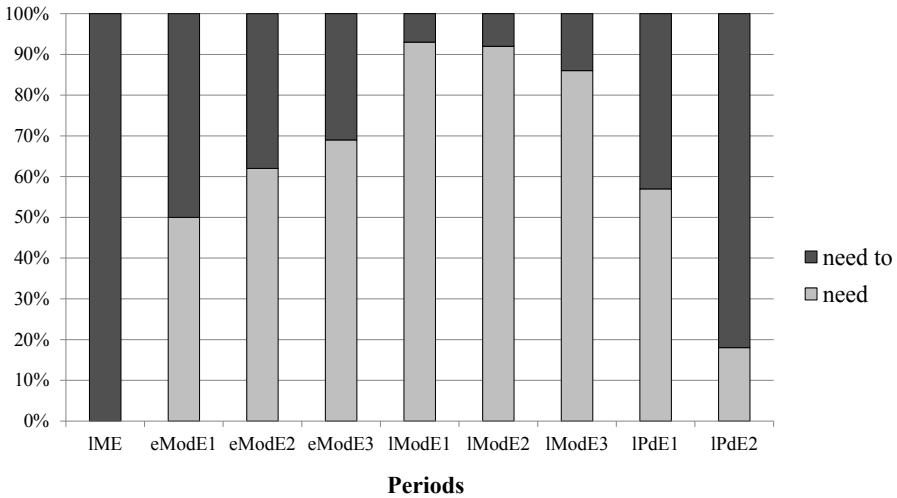


Figure 3. Frequency of *need* and *need to* (IME ‘late Middle English’, eModE ‘early Modern English’, lModE ‘late Modern English’, IPdE ‘late Present-Day English’; eModE, lModE and IPdE are split up in subperiods; there are no data for early Present-Day English)

6. Meaning and form

However valuable the study of meaning and form in isolation could be, for linguists such studies are inherently incomplete. The reason is simple: the linguistic sign combines meaning and form. So most linguistic studies focus on both meaning and form.

6.1. One language: introspection

The Aristotelian Square, we stressed in Section 4, is an account of the relations between two concepts, viz. necessity and possibility, and their negations. As such, it implicitly already tells us something about the kinds of expressions languages use for these notions. For example, the notions of possibility and impossibility are contradictory: that should mean that if a language has expressions for both, then negating one should be equivalent to the other. English has the adjectives *possible* and *impossible*. Thus one would expect that *not impossible* is the same as *possible*. This expectation is partially borne out, but not quite. Perhaps *possible* and *not impossible* are equivalent on a semantic level, but not on a pragmatic level, see Horn (1991). This very linguist is also well-known for a ‘conjecture’ called

‘Horn’s conjecture’ by Moeschler (2006, in print), which says that languages tend not to lexicalize the O value (Horn 1989: 256, 1990: 458). For at least some categories, English gives this claim some plausibility.

Table 1. The missing O phenomenon

A	<i>all</i>	<i>always</i>	<i>both</i>	<i>and</i>
I	<i>some</i>	<i>sometimes</i>	<i>either</i>	<i>or</i>
E	<i>no</i>	<i>never</i>	<i>neither</i>	<i>nor</i>
O	–	–	–	–

For the sets of concepts in Table 1 – interestingly all of them actually non-modal – English indeed lacks one word O expressions. One might have imagined O words such as *nall*, *nalways*, *noth* or *nand*, but they do not exist. For Horn this is reason enough to express sympathy for those linguists (and philosophers) that propose three term categorizations instead of the four term categorization inherent in the Square. Put in geometric parlance, for the lexicon one would not need a square but just a triangle. And Horn furthermore tries to reconcile the quadrangular and triangular views within a Gricean framework. The essential idea, applied to the basic quantifiers, is that there is no need for a *nall* word, for its ‘not all’ meaning is a scalar implicature of ‘some’. Horn can thus propose a Square with three corners, at least for the lexicon.

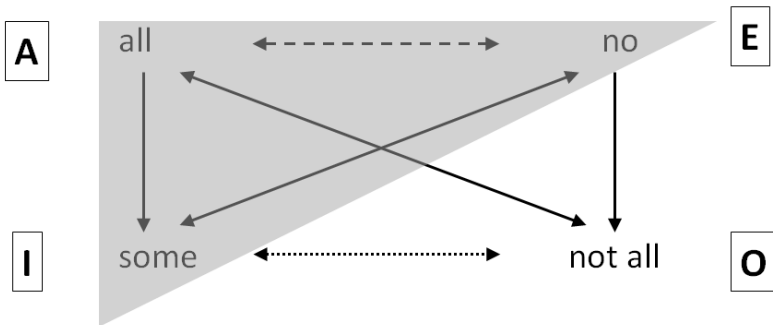


Figure 4. A three-cornered square

But is it true that O concepts tend not to lexicalize and is it only O that has this property? For the first question, it suffices to go to the English modal auxiliaries to find a special O lexicalization, i.e. the *need* auxiliary, as already illustrated in (22a), repeated below.

- (22) a. She *needn't* ask me.
 b. She doesn't *need* to ask me.

Different from the lexical *need*, as in (22b), the auxiliary *need* does not have an A use, so it is fairly dedicated to the O value.⁵

- (23) a. *She *need* ask me
 b. She *needs* to ask me.

One might, of course, retort that *needn't* is not quite one word, but the same observation can be made about the E constructions *mustn't* and *can't*. If these count as lexicalizations, then *needn't* will also count. And since *not* is very selective in cliticizing to words and, in effect, forming a new word with its host, there is a good argument for accepting them. However, if the forms with *-n't* don't count, then this is interesting too, for then we are answering the second question. If *mustn't* and *can't* do not count, then we have to conclude that the English modal auxiliary system does not lexicalize the E corner either. In any case, discussions of this kind (e.g. Löbner 1990, van der Auwera 1996 or van der Auwera and Bultinck 2001) clearly deal with both meaning and form. O is supposed to be a meaning, a concept, and we then check whether English has a word for it or not.

Note that Horn's conjecture is not just about English. It is actually a very strong cross-linguistic claim and, since older stages of a language count as languages too, it also has diachronic implications. So the really interesting test of the conjecture will have to go beyond introspection, and target native speakers, grammars, dictionaries and specialists. There are anecdotal claims about non-English left and right, but the systematic cross-linguistic study remains to be done. We 'meta-conjecture' that Horn's conjecture is quite plausible, at least as a statement about a tendency, but we fear that it is too simple.

6.2. One language, synchrony: one mono-lingual corpus

Wärnsby (2006) is a study of modality in English and Swedish. What she undertakes for both languages is to take a set of modal verbs, e.g. *must* and *may* for English, and provide them with a semantic analysis. The latter goes along two lines. First, she determines whether the modality is epistemic or not. Second, she analyses the sentences containing the modal verbs in terms

of semantic features of the verb (aspect, polarity, and voice) and the animacy of the subject. This is interesting because it has been claimed that values for the latter features are associated with the distinction between the epistemic and the non-epistemic reading. A perfective or progressive lexical verb is, for instance, strongly associated with an epistemic reading for *must*.

- (24) He *must* have read a book. [typically epistemic]
 (25) He *must* be reading a book. [typically epistemic]

And non-perfective non-progressive *must* is strongly associated with a deontic reading.

- (26) He *must* read a book. [typically deontic]

What Wärsby then does is to check to what extent this hypothesis holds true. What is most interesting in this endeavor is her use of the ‘Data Mining’ method and the study thus interestingly differs from Coates (1983), the ground breaking study on English modality that contains the generalizations just mentioned in a very clear way. Coates used the computer as a search and count machine. The claim about the relation between perfective or progressive aspect and epistemic *must* is one of the generalizations that Coates arrives at it on the basis of the observations and the numbers that the computer helped her with. Wärsby (2006) gives the computer a more important role. The computer is fed with the relevant features and it is then instructed to find co-occurrence patterns such that we see to what extent the epistemic vs. non-epistemic distinction follows from the values of the features. At least for English, it appears that the computer will indeed make predictions that confirm Wärsby’s own intuitions. While Coates’ computer was a data gatherer, Wärsby’s is a hypothesis tester.

6.3. More languages: parallel corpora

Van der Auwera, Schalley and Nuyts (2005) is a study of the difference between verbal and adverbial strategies of the expression of uncertainty. In English one can use the verbs *may*, *might* and *could*, but one can also the adverbs *maybe* and *perhaps*.⁵

- (27) She *may/might/could* have seen me.
 (28) *Maybe/perhaps* she saw me.

The meanings of these verbal and adverbial expressions are at least very close and we do not know how they would differ or even whether they differ at all (see Nuyts 2001).⁵ In van der Auwera, Schalley and Nuyts (2005) all the epistemic occurrences of *may*, *might*, *could*, *maybe* and *perhaps* in one of the Harry Potter novels were collected. The authors then analyzed how these sentences were translated in the Slavonic languages. The main question, deemed interesting on the basis of earlier work⁶, was whether the translations used a modal verb or a modal adverb or yet something else. The results for the various Slavonic languages were then compared with each other, and also with English. The computer had a minimal role. It helped find and count the occurrences.

Interestingly, the succession of formal and semantic analysis is a little complex, even for this simple a study. The starting point of this study was form (five constructions), then there was semantic analysis (the identification of the epistemic uses), then analysis of the Slavonic translations, involving both form and meaning (the search for the translational equivalents). Yet note that the point of the exercise was a formal one. The authors wanted to know whether Slavonic languages differed in their preferences for one of the other strategy, independently of semantic factors, for they assumed that the Slavonic verbal and adverbial strategies were as semantically close to one another as the English ones. But in fact, we do not really know whether they differ in meaning, not for English, the language whose modal expressions have been studied most intensively, and even less so for the Slavonic languages. So one could set it as a goal to look at the semantic issue once more: do the various verbal and adverbial strategies have different semantics? The chances that the relatively small data set for English will allow us to see something that has not been noticed yet are small. But now the English data are coupled with translational data and the entire data set could then be the input for what is called ‘multi-dimensional scaling’, already undertaken for other domains of meaning (e.g. Cysouw and Wälchli 2011, compare also Levinson and Meira 2003). This is again a more advanced use of the machine, one that remains to be undertaken for modality.

6.4. One language, diachrony: comparable corpora

The diachronic study of language poses a number of particular methodological problems, which become even more pressing, when form and meaning of such complex an issue like modal elements are concerned. Here, seemingly instrumental decisions about the best approach to and processing of data become highly relevant as they predetermine possible research results. Among the most important general conditions and factors for diachronic research are the following ones.

Even when focusing on only one language and its development through time, we are dealing with distinct linguistic systems: Old High German, for example, though being the (remote) ancestor of Modern German, is a distinct language, different from – if closely related to – the language of today. In sharp contrast to comparative studies of modern languages, no living speaker, and not the researcher either, has native speaker competence of linguistic systems of the past. Due to this trivial but important fact, several methods available for studies of modern languages are not employable here (the armchair method, questionnaires, qualitative interviews etc.). Instead, the researcher has to rely on corpora and on his or her secondary (compensatory) competence in the older stages of a language. The latter, which must include linguistic as well as philological and sociohistoric knowledge, is dependent on the available diachronic testimony of the language. This means that diachronic corpora play an extremely important role in the investigation of diachronic questions (the term ‘diachronic corpora’ is used here to refer to corpora of older stages of a language in general, independent of whether they are diachronic, i.e. comprising a chronological dimension in themselves, or whether they just represent one historic layer of synchrony). The situation is even more aggravated by the fact that diachronic testimonies are typically insufficient with respect to several parameters, and typically non-improvable. They represent the written register only and display a very restricted number of text types and registers. Their dialectal and chronological distribution is completely arbitrary and non-homogeneous and does not meet empirical validity standards set up by modern corpus linguistics in any way. These deficiencies are of course correlated with the temporal distance of the investigated stage, the degree of standardization and further contingent historical facts (loss of documents through fire etc.). As a rule of thumb, we may say that the older the language, the more deficient the available corpus data.

Notwithstanding these problems, there is no way around the use of adequately laid-out corpora for diachronic linguistics. In particular, it is not sufficient to rely on a number of selected illustrative phrases, which have been handed down by philologists and quoted in every textbook or grammar for decades, to set up hypotheses on a diachronic linguistic situation.

Some remarks on diachronic research on modal verbs and their grammaticalization may illustrate what is meant here. As mentioned in earlier sections, it has become common knowledge that modal verbs (or their pre-modal ancestors) undergo a unidirectional change from non-epistemic to epistemic functions, whereby the latter become integrated into closed set paradigms encoding factuality judgments and even functions typically associated with verbal mood (optative, hortative, directive, subjunctive, conditional etc.). These results have been attained cumulatively by a number of detailed corpus studies, e.g. the study on the grammaticalization of the German modals by Diewald (1999). Only through a thorough investigation based on a sufficiently large selection of diachronic texts was it possible to show that the present-day system of the six modals *dürfen*, *können*, *mögen*, *müssen*, *sollen* and *wollen* was built up only gradually during the history of German, and received its basic outline as late as at the end of the Early New High German period. In earlier stages, we are confronted with different oppositions between the members of the respective modal systems. Furthermore, the number of the members in those systems of (pre-)modal elements was by no means identical with one of the present-day system consisting of the above mentioned six modals. Thus, in Old High German, the system was composed by three to four members (i.e. *mugan*, *sculan*, *wellen* and – peripherally *muozzan*), representing contrasts between subtypes of none-epistemic modality. *Kunnan* and *thurfan* were extremely rare at that period, were mainly restricted to their lexical meaning and did not participate in the modal system. This statement could only be arrived at by extensive corpus-driven study of the Old High German data (see Diewald 1999: 295-431). In contrast to this, earlier investigations based on a very limited number of handed down text book examples, which were adopted without testing, assumed that the present-day system was a mere succession of a similar older system, the only difference being that individual modals, due to semantic change, occupied different places in the respective system-internal oppositions. Even an otherwise illuminating study on the development of the German modals like the one by Bech (1951), due to lack of corpus research, erroneously assumes a six-member system of (non-epistemic) modals for Old High German.

Thus the necessity of working with corpora in diachronic linguistics is undeniable, and the methodological challenges confronted with when setting up diachronic corpora are to be taken very serious. The case of German is particularly interesting, in this respect, too. Though German is a well studied language, the availability of diachronic corpora is still not satisfactory. Even though historical texts have been digitized, and there are a number of text collections of different sizes and formats, there are neither common standards for digitization, meta-information, or text annotation; nor are there commonly used, unified search interfaces. Furthermore, many of the digitized texts are not available to the general public. A large project called *DeutschDiachronDigital* (DDD) aims at creating a generally available, unified resource with common standards and search programs (cf. e.g. Lüdeling et al. 2004), but its resources are not yet available. To compensate for this gap at least partially, a (new) small diachronic text corpus, called ‘kali-korpus’ (<http://www.gabrielediewald.de/index.php/kali-korpus>), was set up recently, which focuses on research questions in grammaticalization studies, and is oriented towards common standards and formats of digitizing and annotation. Leaving aside technical details, some features of that corpus are mentioned here as an illustration of typical questions and problems (and their solution) in diachronic corpora.

In the kali-korpus, the (partial) morphological annotation, which focuses on verbal categories, encompasses all verbal units (finite and infinite) in their occurrences through all documented periods. The morphological annotation parameters determine a hierarchical tag-set containing the grammatical categories of finiteness, inflection, tense, mood, person, and number (cf. Diewald, Lehmborg and Smirnova 2007). Each verbal token is analyzed and tagged with information regarding person, number, tense and mood. In addition to this the matching headwords and translation terms – we are dealing with different, diachronically separated languages – are added to each token. With this homogeneous morphological and semantic annotation, all forms and meanings of verbal elements can be easily found and diachronically compared.

While the study on the grammaticalization of modal verbs (Diewald 1999), still had to resort to the traditional, time-consuming method of extracting and counting each token manually, more recent studies on the rise of evidential markers in German (Diewald and Smirnova 2010) were able to make use of this research tool, which proved extremely useful for finding and counting relevant forms, and, in addition, it helped identifying linguistic contexts for the developments under investigation.

7. Conclusion

Modality, so we hope to have shown, is interesting and difficult. The issues concern meaning and form, they are language-specific and cross-linguistic, and they relate to synchrony as well as diachrony. A variety of methods offer themselves. They can take the linguist from the armchair to the computer screen, to questionnaires, grammars, dictionaries, to ready-made corpora and to texts to be treated for corpus inclusion.

Notes

1. Both authors are grateful to the Belgian Federal Government (IAP-grant P6/44 on grammaticalization and (inter)subjectification).
2. In addition to monosemy and polysemy, there is also homonymy and indeterminacy (gradience) and even if one is of the opinion that these distinctions are not that important (as in the semantic map approach, e.g. van der Auwera and Plungian 1998), one has to say why they would not be that important. So it remains an issue.
3. As Bernhard Wälchli points out, rightly so, historical linguists also engage in reconstructing forms and meanings. The work they are doing is not corpus linguistics in the modern sense, but they always start from corpus attested form meaning correspondences.
4. The representation is taken to have introduced by 2nd century Apuleius of Madaura (see Londey & Johanson 1987).
5. It should be kept in mind that there is a fundamental functional difference between lexical signs on one hand and grammatical signs on the other. This means that even if there is little difference in meaning between an adverbial expression of epistemic meaning and a grammaticalized epistemic modal, the semiotic status of the signs in question, and thus their function, differs markedly (Diewald 1999: 13-19, 46f.).
6. The adverbs may or may not grammaticalize from verbal constructions, as is the case for *maybe*, but not for *perhaps*. This distinction is irrelevant for our point though.

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The making of a festschrift, is it a ritual?

Andrea Ender and Bernhard Wälchli

“The gestures which we sometimes call empty are perhaps in fact the fullest things of all.” (Goffman 1967: 91)

1. Introduction

As has been known at least since the times of Wilhelm von Humboldt, language has two sides, the product (*ergon*) and the process (*energeia*).¹ Pragmatics is the study of how to do things with words and it is applied here in a domain where the process is particularly opaque in contrast to the open accessibility of the product. There are hundreds of festschriften in any university library, but hardly any studies of how festschriften are made.

According to Goffman (1967: 91), an environment “is a place where it is easy or difficult to play the ritual game of having a self.” In the environment of scientific publications the ceremonial activity of making a festschrift is not undisputed. According to many actors on the scientific market place, festschriften violate modern scientific order, like, according to Goffman (1967: 141) common criminals offend the property order, traitors the political order, and incestuous couples the kinship order. For the field of geography this is stated plainly in Wirth (1995: 13), who argues that there are not enough good journal publications because renowned authors are urged to write articles for festschriften. According to Wirth, festschriften – originally a well justified product of social interaction of scientists – have become an empty ritual (*bedeutungsenteleertes Ritual*) and an annoying routine obligation. Another author portrays festschriften in an even more radical way as “obscene performances in which someone is declared the party animal (*Festsau*) so that s/he can be roasted on a spit” (Keazor 2002; translated by the authors).

Such ceremonial profanations of festschriften are a potential threat to the face of a festschrift editor. It clashes with Goffman’s (1967: 91) postulate that “[t]he environment must ensure that the individual will not pay too high a price for acting with good demeanor and that deference will be accorded him.” In this paper, the conditions and contextualizations of the editors’ activity will be considered, as well as the processes and practices of social interaction that are involved. The basis for our considerations is Iwar Werlen’s definition of the ritual as an expressive institutionalized action or

sequence of actions (“expressive institutionalisierte Handlung oder Handlungssequenz”, Werlen 1984: 81). We will examine the symbolic nature of the *festschrift*, yet mostly concentrate on the intentions and the actions performed by the editors that redact a *festschrift* felicitously or non-defectively in a broader pragmatic sense (cf. Austin 1962, Searle 1969). In doing so, we try to answer the question to what extent the making of a *festschrift* can be considered a ritual in scientific communities.²

We will first engage in a discussion of the two terms “*festschrift*” and “ritual” (Sections 2 and 3), before possible ritual aspects in the making of a *festschrift* are examined according to the three major domains “action”, “expressivity”, and “institutionalization” of Werlen’s approach (Section 4). Section 5 is dedicated to the manner of performance, which is especially relevant for *festschriften*. Finally, Section 6 presents our concluding remarks to the question “Is the making of a *festschrift* a ritual?”.

Our method is empirical and we are trying to combine emic and etic accounts, to use the terms of Pike (1967). Being in the process of editing a *festschrift* ourselves, we can try to monitor our own behavior and understand the underlying reasons. Participant observation is considered a very valuable approach in the study of complex cultures of communication where speech events are not only public and predefinitions may be implicit and therefore not directly accessible (Werlen et al. 1992: 8). A further major source of data is an anonymous electronic questionnaire which has been completed by 31 editors of *festschriften* from eight different countries in the field of linguistics and the philologies (1987–2012, 87% of these *festschriften* published in the 21th century). An outsider’s perspective is provided by a more *festschrift*-distant academic population in Vancouver, where students and scientific staff have been asked to provide spontaneous definitions of the term “*festschrift*”. Finally we use a discourse analytical approach to publicly accessible documents that discuss *festschriften*. Interestingly, there is comparatively little public discourse on *festschriften*, given that the product itself is a written publication. A major source is Zillig’s (2004) novel *Die Festschrift*. While our material thus assembles a variety of emic accounts (behavior considered meaningful to the actors) it is difficult to arrive at an etic, ‘culturally neutral’ account. In our view this can be approached only by combining a wide range of different data sources with different kinds of actors involved. However, we have to emphasize at this point that there is no neutral point of view when it comes to writing on the topic of *festschriften*; the very publication of a paper about *festschriften* in a journal (as Wirth 1995) renders the taking of a negative attitude likely.³ From the point of view of journals, *festschriften* are a nuisance. However,

the publication of a paper in a *festschrift* – as is the case in the present contribution – makes it impossible to take an entirely negative stance.

2. What is a *festschrift*?

Is the category ‘*festschrift*’ best conceived of as a classical Aristotelian category with a set of necessary and sufficient properties or is it rather a prototype whose instantiations exhibit family resemblance? To provide an answer to this question, one item in the questionnaire was concerned with the necessary features of a *festschrift*. Participants were able to select from the following items: *tabula gratulatoria*, a list of publications of X, a photo of X, a CV of X, the closest relatives of X have to be mentioned, and at least one humorous article (here and in the rest of the text, X refers to the person to be honored by a *festschrift*). The results displayed in Figure 1 show that *festschrift* editors do not agree about necessary properties of *festschrifts*.

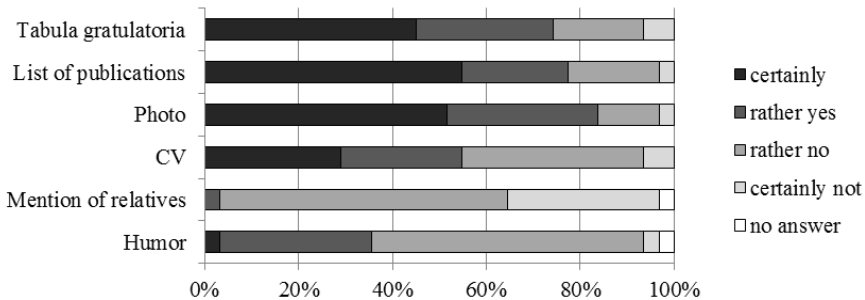


Figure 1. Necessary features of a *festschrift* according to *festschrift* editors (n=31)

For a *festschrift*, it seems rather unclear what the true ‘associates’ in the sense of Hawkins (1978: 123) are.⁴ One respondent even wrote: “I think there are very little necessary features. Conditions vary from case to case.”

Most informants agree that a photo should be in place. However, it is not obvious what the concrete function of a photo in a *festschrift* is. Taking into consideration the framework of visual interaction (Kress and Van Leeuwen 1996), we can note that the represented participant (the person depicted) is different from the interactive participants (people communicating with each others through images), except in the very special case of the honoree looking at his own picture in the *festschrift*. How special photos in *festschrifts* are becomes most obvious when considering pictures that

are not well suited for festschrifts, such as the photos (a) and (b) in Figure 2. Traditional pictures in festschrifts like (c) often show the honoree looking directly at the viewer. According to Kress and Van Leeuwen (1996), this may serve the purpose of a relation of admiration for, and identification with, a hero. However, such a relation does not arise, if the honoree is depicted together with two other people having fun at a conference reception as in Figure 2 (a). Another option often chosen is to show the honoree at work. Yet the photo in Figure 2 (b) with the honoree at work discussing different issues with two different people at a conference with an empty glass of wine in his hand is not the kind of photo expected in a festschrift. Such pictures do not evoke connotations of a devotional purpose (cf. Belt-ing 1990: 57). Needless to say, all three photos are too small for usually-styled photos in a festschrift and this makes them performatively infelicitous and defective (cf. Austin 1962, Searle 1969).



Figure 2. (a) and (b) Two photos of a honoree not appropriate for a Festschrift, (c) traditional picture in a festschrift

One property often associated with festschrifts is the *tabula gratulatoria*, i.e. a list of colleagues and friends who send their best wishes to the honoree. However, the following quotation shows that one of the authors contacted for a potential contribution did not take for granted that every festschrift contains a *tabula*.

I'm afraid I am totally overcommitted at the moment...and will not be able to contribute to the Festschrift. I would, however, like to add my name to **any** *tabula gratulatoria* **that you may wish to include**. [our emphasis]

Adding to the confusion is the fact that untypical festschrifts are often considered excellent members of the category festschrift. The festschrift refusenik (*Festschriftverweigerer*) Hans-Martin Gauger received a collection of linguistic anecdotes (Koch et al. 1997) for his 60th birthday, which is argued to be a substitute for a festschrift (*Festschriftersatz*), but not a surrogate festschrift (*Ersatzfestschrift*). However, it does contain a *tabula grat-*

ulatoria. Another linguistic festschrift is termed “eine etwas andere Festschrift” (*a somewhat different festschrift*) or a “Fastschrift” (germ. *fast* meaning ‘almost’) and in one case, somebody received a festschrift on the occasion of 65 and a half years, a very special festschrift for a very special person. Finally, the *Studies out in left field: defamatory essays presented to James D. McCawley on the occasion of his 33rd or 34th birthday*, edited by Zwicky et al. (1971) break a vast number of festschrift conventions.

Examining the spontaneous definitions of four linguistic professors, four PhD students and one graduate student from Vancouver a few recurrent elements can be found:

- the dedication: in honor of, celebration of,
- the status of the honoree: still living (usually well-known) individual, a much-loved scholar, someone who has done a lot of work/important research, respected academic,
- the type of publication: a book, a collection of writings/papers/articles,
- the authors: students (and sometimes colleagues), students and friends, former students and current colleagues.

From this list, the defining element “in honor of”, being mentioned five times, seems to be of great importance. Interestingly, nobody included the occasion for which such a volume is collected. The notion of festschrift thus seems to be neither a classical Aristotelian category nor a prototype since non-prototypical instances are sometimes considered the best instantiations of the category. In a way, it is a rather rainbow-type category: the best member of the category is always out of reach wherever you are.

A very promising line of research in clarifying the notion of festschrift is the diachronic one. For the study of rituals, the making of festschriften is of particular interest because even if their products are books, they are performed without written instructions. This favors unconscious diachronic change: “The illiteracy of the tradition may favor changes in rituals which remain unnoticed by the ritual community” (Werlen 1984: 63).

The only substantial contribution to this field that we are aware of is the pioneering work by Wardenga (1995), who writes about the development of geographical festschriften in Germany from 1893–1968 based on a sample of 117 festschriften. Wardenga identifies three major types of festschriften which form a diachronic chain: disciple-festschrift (D), disciple-and-friends-festschrift (DF) and disciple-friends-and-colleagues-festschrift (DFC). (Note, however, that the traditional Latin name for festschriften – *liber amicorum* ‘book of friends’ – testifies to the fact that the distinction between disciples and friends is far from clear.) D remains dominant until the 1920s. Its main function is to demonstrate the scientific productivity of

a school. Symptomatic for this period is that critical approaches to the work of the scholar to be honored are consequently avoided (Wardenga 1995: 5). The DF has become common after World War I. In this period, *festschriften* are often used as an instrument in scientific politics. Characteristic for the DFC in the fifties and sixties is the subtle depersonalization which goes hand in hand with a significant quantitative increase (the *Mehrfachfestschrift* – several *festschriften* for the same scholar for various birthdays – becomes more common). The thematic range of the articles in a *festschrift* becomes broader and begins to say more about the contributing authors than the scholar to be honored. Wardenga sketches a diachronic development: in D we find a subordination of the authors under the supposed principles of a school, in DF, the work of the scholar to be honored represents the basis which the articles draw from. Finally, in DFC we encounter a complete individuality of the contributions with a high degree of heterogeneity which, in turn, makes it increasingly difficult to see distinctive properties of particular *festschriften*.

There is no solid evidence of the extent to which similar developments can be observed beyond geographers' *festschriften*, but it is not unlikely that Wardenga's typology is also valid in many other fields. In linguistics, some authors still seem to have in mind the DF model, but eventually tend to perform according to the DFC model. One contributor of the present volume first asked us for a list of publications of the scholar to be honored. In the paper submitted by him, however, he did not refer to the honoree. In the present volume 50% of the contributions do not contain a reference to the scholar to be honored. A review of a *festschrift* written by somebody who has also received a *festschrift* starts with the following words (translated by the authors): "Festschriften [...] very often suffer from the heterogeneity of the contributions, because the personal relations to the honorees (and to one of their very often manifold interests in research) seem more important than the thematic coherence of the volume."

However, at least in the field of linguistics, it seems that Wardenga's typology is not fully sufficient to account for contemporary *festschriften*. The new trend – the current volume exemplifies this – is to turn *festschriften* entirely into thematically defined collections of articles which are distinguished from ordinary collections of articles solely by the range of authors included and by their publication on the occasion of a certain birthday. In the clash of the older DFC model and the actual requirements for higher thematic and formal coherence proclaimed by the publisher, the publisher is normally the winning party. This entails that the contributors of a *festschrift* cannot any longer be the set of closest friends of the person to be honored.

If festschrifts become increasingly indistinguishable from ordinary collections of articles, the question arises as to whether they differ in quality. This seems to be a major concern for some publishing houses and series' editors, who are increasingly reluctant to accept festschrifts. The fact that festschrifts are treated unfavorably is also observable in the following remark of an editor: "The publisher explicitly wanted us to avoid the term 'festschrift'."⁵ This negative attitude on the part of publishers diverges from the emic perspective of festschrift editors. When asked "Do you think an average festschrift (not the one edited by yourself) has the same academic quality as any other average collection of articles?" 48% answered 'rather yes' and 39% 'rather no' (6.5% both for 'certainly no' and 'certainly yes'). In this respect, a mocking evaluation of the quality of papers in festschrifts in Zillig's novel is thought-provoking:

Generally, it must be said that the kind and number of mistakes and oddities that appeared in the contributions implied that a large number of authors were confident that their sloppy manuscripts would turn into theological papers adhering to a certain scientific standard under the control of the editors. There were innumerable violations against all principles of scientific composition such as they are considered imperative, as a matter of course of undergraduate students' term papers. (Zillig 2004: 36; translated by the authors)

Regardless of the question about the general quality of papers, the editors are aware of the publisher's resentment. In answer to the question "Do you think it has become more difficult to publish a festschrift nowadays as opposed to earlier?" 22% marked 'certainly' and another 52% 'rather yes', whereas only very few editors think that it has rather not (19%) or certainly not (7%) become more difficult to publish a festschrift.

3. What is a ritual?

The term ritual is used in quite different ways in distinct research traditions. According to Goffman (1967: 57), the "ritual represents a way in which the individual must guard and design the symbolic implications of his acts while in the immediate presence of an object that has a special value for him." Goffman's approach is inspired by French religious sociology (Durkheim), but he applies the notion of ritual to modern secular living, where the individual "stubbornly remains as a deity of considerable importance" (Goffman 1967: 95). Adopting Goffman's extensive approach, Werlen (1984) discusses the notions of ritual in such different fields as cultural anthropology, sociology and social psychology in a comprehensive

manner, which leads to a formulation of his own definition of rituals as institutionalized expressive acts. The notion is applied empirically in two highly distinct domains: the Roman mass and the beginnings and endings of everyday conversations. The aim of Werlen's approach is to be inclusive, "to describe a large set of acts that are structurally similar, but otherwise quite different" (Werlen 1984: 89; translated by the authors).

While adopting Werlen's definition, Antos (1987: 12) criticizes Werlen's approach for being too inclusive. According to Antos, the expressive aspect of rituals is characterized by a set of indicators such as the suspension of the sincerity condition, lack of informativity and formulaity. Antos' material are opening words (*Grussworte*) in festschriften by which he does not mean the academic festschriften discussed in this paper, but commemoration of anniversaries, jubilees or other important events where politicians and other public figures address the participants, praise the event and thank those responsible for its organisation. In our view, Antos' approach, while well-suited for the material he treats, is too narrow for a general discussion of rituals. For our purposes, for instance, it would be highly problematic to apply the suspension-of-sincerity-condition to academic festschriften. We have some difficulties imagining that a team of editors can edit a festschrift without having the intention of sincerely wanting to honor a scholar.

While being quite inclusive, Werlen (1984: 72) excludes the ethological notion of ritualization in biology coined implicitly by Tinbergen (1952) and explicitly by Huxley (1966). Hereby, he differs from Haiman (1994: 5), who claims that ritualization both in ethology and anthropology describes "the very general process whereby phylogenetically instrumental actions are *emancipated* from their primary motivation and free to serve a communicative function instead". In our view, Haiman's approach is primarily ethological: he shows convincingly that the ethological notion of ritualization can be applied with great profit to the diachronic study of language. Effects of ritualization in language, according to Haiman, are grammaticalization and double articulation (the smallest meaningful signs are made up of still smaller units which are themselves meaningless).

In this sense, Haiman understands ritualization as the acquisition of meaning: ritualization is the creation of language (such as the stylized searching behavior of bees at food sites which then evolves into bee language). The instrumentalization entails a codification with a fixity of form. He conflates, though, the opposition of ritualization and imitation that other researchers make in search of the human predisposition for acquiring language and other symbolic behavior (Tomasello and Camaioni 1997). Whereas, in their reasoning, ritualization is "basically a kind of social

‘shaping’ process in which each participant learns the effects of his or her behavior on the other’s behavior, sometimes in a complex sequential pattern” (Tomasello and Camaioni 1997: 12), imitative learning involves bidirectionality and therefore also an understanding of the intentions of others.

However, Werlen (1984: 72) is certainly right in warning of an application of the ethological notion of ritualization for the description of culturally determined human rituals. He points out that stylized kisses in rituals would be ritualized ritualizations in an ethological perspective, since kisses are explained as dysfunctional breeding behavior by ethologists. However, knowing why human beings started to kiss is of little interest for understanding kisses in rituals.

In the socially and culturally determined view, some behavior may be considered a ritual if “it follows *patterned routines*; it is a system of *signs* that convey other than overt messages; it is sanctioned by strong expressions of moral approval; and it has adaptive value in facilitating social relations” (Firth 1972: 29–30). In the introduction to a recently edited volume, Senft and Basso (2009: 2–3) define ritual communication as “artful, performed semiosis, predominantly but not only involving speech, that is formulaic and repetitive and therefore anticipated within particular contexts of social interaction” and assemble publications on a wide range of “ritual events as sites of challenge to traditions and to existing power relations”.

Bearing all these considerations on festschrifts and rituals in mind, it seems promising to consider the making of a festschrift according to Werlen’s domains “action”, “expressivity” and “institutionalization”.

4. Ritual aspects in the making of a festschrift

4.1. Action

Ritual in Goffman’s sense implies deliberate action. Accordingly, Werlen (1984) views the kind of action involved in rituals as generally volitional. However, “[t]he predefinition of voluntariness does not mean that the performer in a ritual acts fully consciously or unforcedly” (Werlen 1984: 81; translated by the authors).

The person taking part in a ritual becomes involved with the specific realm and reality of the ritual; often, her obligation is not to be convinced of something, but to perform the right action at the right time. However, it may be the case that the performer in the ritual is not aware of the sense of his or her action or does not want to know its sense. Nevertheless, rituals are not

omitted, sometimes due to sensations of fear from deities or similar reasons.
(Werlen 1984: 62; translated by the authors)

Deliberate choice and specific expectations of the environment do not exclude one another. However, not every person is completely free to decide that s/he wants to edit a festschrift, unless s/he wants to conflict with the “doctrine of the *Infelicities*” of festschriften, “*the things that can be and go wrong*” (Austin 1962: 14). Therefore, there must be a certain scholar who can be honored with a festschrift and this person must be in a very specific period of his or her life. Furthermore, there must be the intention of honoring this person and there must be the knowledge or the presupposition that this person will feel pleased and honored by a festschrift.

The very presence of such conditions can be reason enough for certain individuals to feel pressured. But is there, in the community, some generally received opinion as to who is responsible for compiling a festschrift? To explore this question, our questionnaire contained the item: “Who – in your opinion – is obliged to edit a festschrift for X?” One respondent hastened to point out that “‘to be obliged’ is too strong!”, hereby emphasizing the moment of deliberate choice. A point in favor of our formulation of the question is that Goffman (1967: 50) speaks of obligation as well: “an obligation which *is* felt as something that *ought* to be done may strike the obligated person either as desired thing or as an onerous one, in short, as pleasant or unpleasant duty.” Koch et al. (1997: 10–11) take for granted that the editing of a traditional festschrift cannot be fun: “By the way, we do not want to conceal that making the festschrift was not only hard work, but that we also had a lot of fun editing this booklet. This would certainly have been different with a real festschrift.” These considerations might suggest that only the explicit early rejection of a festschrift by a scientist could disambiguate the situation and eliminate the duty for action to be taken by those feeling responsible. The answers to our questionnaires suggest that this attitude is mistaken. When asked “Do you envy colleagues whose elder colleagues explicitly stated that they would never like to get a festschrift?” 63.3% answered ‘certainly not’, 33.3% ‘rather no’, and only 3.3% ‘rather yes’. One respondent wrote “It is fun making a festschrift but people should not feel pushed [...] better no festschrift than a forced one”. However, the question arises as to the conditions you feel pushed by or whether or not you can choose to be pushed. The results (Figure 3) suggest that there is a high amount of indeterminacy as to who is considered responsible. The large amount of “gray answers” (rather yes, rather no) point at a diffuse perception of obligation.

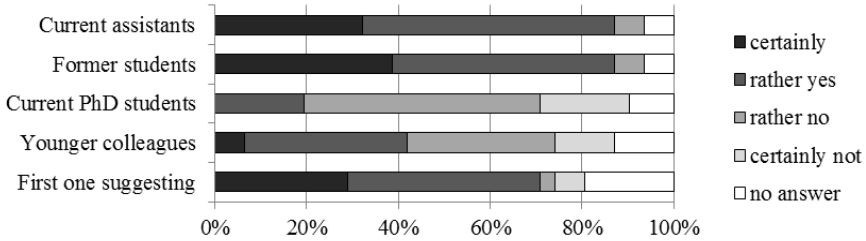


Figure 3. Who is obliged to edit a festschrift? (n=31)

This can lead to situations where several teams of editors independently start feeling responsible for initiating the process. This is nicely described in Zillig (2004: 19).

It seems that in the emic perspective of festschrift editors, the opinion prevails that the decision to edit a festschrift is a deliberate one. To our question “Did you feel pressured by your environment to edit a festschrift for X?” 45% answered ‘certainly not’, 26% ‘rather no’, 23% ‘rather yes’ and 6% ‘certainly yes’. This could be expanded by an etic approach where the probability of festschrifts given typical felicity conditions (65th birthday⁶ of professors) is modeled statistically. If people were able to choose completely freely, festschrifts viewed as statistical events would have to be distributed completely at random. Without having carried out any further investigations it seems obvious to us, however, that festschrifts are not randomly distributed over 60 or 65-year-old professors. If there is no random distribution, what are the relevant factors? As already pointed out by Wardenga (1995: 4), there is no obvious correlation between the importance and impact of a scholar and the probability that s/he will be honored with a festschrift. Yet it is apparent that festschrifts occur in hotbeds and as outliers (these terms are borrowed from areal typology, see Nichols 1992: 131). In certain populations festschrifts are endemic. For instance, if you are a professor in Slavic studies in Germany, it is much more likely that you will be honored by a festschrift than if you are an average linguistic typologist. An important factor seems to be the local network. If your elder colleague at your department receives a festschrift, this seems to function as a booster to raise the awareness about festschrifts and can drastically increase your chance to receive one yourself. Unfortunately, there are no epidemiological investigations of festschrifts, as far as we know.

Scientists are highly responsible-minded people. They are well aware that certain things have to be done whatever the costs and whoever does it. Hence an important question is the editor’s belief whether her or his action

was absolutely necessary for the successful editing of a festschrift. Interestingly, the answers to the question “Do you think there would have been a festschrift for X if you had not helped edit one?” are rather equally distributed (19% ‘certainly yes’, 23% ‘rather yes’, 32% ‘rather no’, 26% ‘certainly no’).

A further concern is whether or not the editors benefit in some way from the work effort on their behalf. We therefore asked: “What effect does/did the festschrift have for your academic career?” For 37% it was ‘rather positive’ and it was not perceived as negative by anybody, but for the majority it made no difference (63%). 13% answered that the editorial work ‘certainly’ helped to enlarge their academic network, 39% ‘rather yes’, 42% ‘rather no’ and 7% ‘certainly not’. The large proportion of editors who did not profit from editing a festschrift in their self-reporting shows that self-interest cannot be the dominant motivation to edit a festschrift. On the other hand, it is important to note that it is a game where you do not run a risk of losing much. A danger seems to be, however, sporadic risks of severe personal conflicts with potential contributors “because they did not like the concept of the festschrift” (mentioned four times with one person) and especially “because you had not asked them to contribute to the festschrift” (mentioned six times with one person and once with two persons).

4.2. Expressivity

A ritual is expressive in the sense that the performed action A stands *for* a certain ‘content’ B (Werlen 1984: 83). As far as festschriften are concerned, the question arises as to what the collection itself represents or, put differently, what festschrift editors want to express when making a festschrift. In the questionnaire we asked “Why did you edit a festschrift for X?” and suggested the following possible motivations: (a) to thank X that he/she helped you with your academic career, (b) to show that you belong to the school initiated by X, (c) because X had always been very fair to you, (d) to express that you think that X is a distinguished scientist, (e) because it would be a shame for X not to get a festschrift, (f) because it would be a shame for you if you had not been able to edit a festschrift, (g) to show your environment that you are among the closest friends of X, (h) because you thought X would be very happy to get a festschrift. Other reasons could be filled in manually.

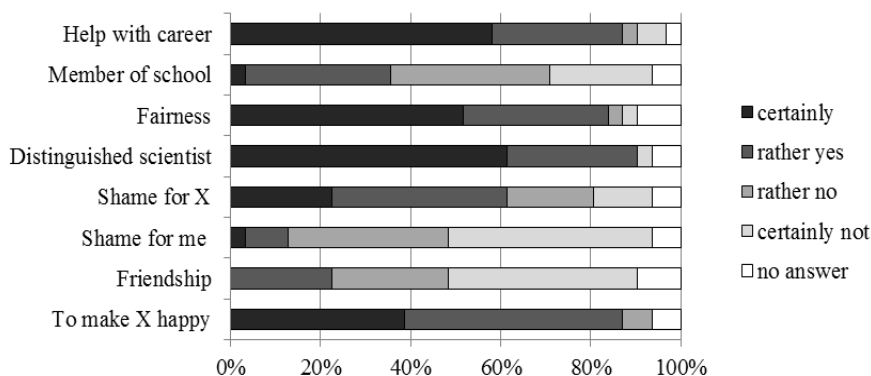


Figure 4. Why did you edit a festschrift for X? (n=31)

Figure 4 shows that the motivations are highly diverse. They can be said to be both scientific and non-scientific at the same time. For most editors, making a festschrift is first and foremost an expression of distinct acknowledgement for the honored person's scientific merits. However, making a festschrift is also making a gift in a plain, non-metaphorical way. It is viewed as a recompensation, as an "antidosis". This is also in line with some of the editors' comments like "I thought it would be a gesture of personal friendship as well as a professional one." or "X is a good friend, and would be pleased to receive a Festschrift". This is well in line with Goffman's (1971: 63) notion of positive rituals that "affirm and support the social relationship between doer and recipient" similar to the *utang na loob* relationship in Philippine culture (Dolan 1991: 89).⁷

As expected, the commitment to a school is no longer as dominant as it used to be for festschrifts in earlier times, neither is plain friendship a dominant motivation. Furthermore, an act need not necessarily be a symbol by itself. It is also possible that an action is taken only because the absence of that action could be interpreted in a particular way which must be avoided. The question thus arises as to whether somebody loses face if there is no festschrift, given that the felicity conditions for making a festschrift are met. If this is the case, the question then becomes "who loses face?": the person who is not honored or the person who was expected to produce a festschrift but did not do so. According to the perception of festschrift editors, the opinion prevails that there is a much higher danger that the person to be honored loses face. This is remarkable since this assumption presupposes a model where scientists are not directly in control of their reputation by their actions alone. One editor mentioned "it was important to raise the status of the subject within the university" as a major reason for making a

festschrift. A successful scientist is expected to bring up disciples who still respect her/him if s/he advances in age. Yet this attitude is not compatible with the view expressed in the ceremonial profanation example provided in the Introduction, which suggested that editing a festschrift is a bold attempt by impertinent greenhorns to see themselves as a distinguished teacher's equals.

Most of these reasons are not overtly stated in the final product and can only be inferred from common knowledge of the editor(s) and the honoree, as well as the conventional meaning of a festschrift. Reformulating a passage from Searle (1969: 60–61), this would mean that the editor “intends to produce a certain illocutionary effect” (i.e. celebrate, thank, please, etc. the honoree) by means of getting the honoree “to recognize his intention to produce that effect, and he also intends this recognition to be achieved in virtue of the fact that the meaning of the item he utters” (i.e. the festschrift he produces) “conventionally associates it with producing that effect”.

Only 16% of the honorees in our sample ever mentioned to somebody that s/he would like to have a festschrift before the festschrift was planned. And only 26% of the editors asked a relative of the honoree to find out whether s/he would be glad to receive one. Therefore, we have to assume that most of the festschriften are tackled only with the general assumption that the honoree will be pleased.⁸ This only gives a very general impression – regarding the costs it takes for the donor(s) – about the general meaningfulness of this gift and its anticipated positive acceptance.

The symbolic nature of festschriften bears yet another dimension. The issue is not only what the editors want to express, but also the extent to which the crafting of a festschrift as a ritual symbolizes a major change in the environment where it is performed. We know from frame semantics (Fillmore 1985) that concepts are difficult to detach from the frame they evoke, which encompasses the cultural context in which concepts are applied. In a way, a festschrift ritually re-enacts the loss of power of a scholar when retiring at the age of about 65 years. Especially in Central Europe, where festschriften are most vital, professors forfeit most of their power to influence the career of younger scholars when retiring. They gradually have to stop applying for research projects and supervising PhD students and they do not teach any longer. And most importantly, they have to vacate the chair they were holding which bears major consequences for many other people affiliated with that chair. The festschrift is thus a ritual celebration which confirms that the spirit of a scholar has been passed to others, who still hold power somewhere else and hence, the original power will not

be lost. In a society where scholars would not retire, festschrifts would not make much sense.

Another important aspect of expressivity in festschrifts pertains to indirect communication. It is a characteristic of many festschrift contributions to contain hidden allusions. Zillig (2004: 37) gives a marvellous example: a contributor in a theological festschrift begins his article with an example from a women's magazine to allude ironically to the merits of the honoree in establishing a center for feminist theology and the theology of minorities. For obvious reasons, we cannot refer here to the hidden allusions in the present contribution and elsewhere in this volume.

4.3. Institutionalization

There needs to be a certain amount of social agreement that a collection of writings, i.e. a festschrift, is a recognizable way of honoring and celebrating a person in order to make a festschrift a felicitous gift, both for the donor and the presentee. "Ritual behavior requires cooperation with one's peers in treating something as a natural fact when it is merely a social fact; it requires acquiescence to social conventions and thus constrains interactants' freedom to act" (Basso and Senft 2009: 10). We therefore want to consider how academia provides the contexts for the meaning and the making of festschrifts so that the procedures seem to become formalized enough to be perpetuated from one generation of scientists to the next.

Ritual is associated with repeated action. According to Mead (1973: 90), "it is of the essence of ritual that those who participate in it have participated before." However, most festschrift editors have edited only a single festschrift (77.5% in our sample, 13% twice, 6.5% three times, 3% more than three times). Haiman (1994) and Leach (1966) argue that one may be a novice in ritual performance. But, "the stability of the form of the ritual through time is dependent on the fact that it is familiar to most of the actors" (Leach 1966: 407) or in other words, "it is essential that those who participate are following a model that has been established (perhaps by others) who have participated before" (Haiman 1994: 23, parentheses as in original).

But how does a festschrift editor learn to repeat or to perform in a more general sense? 100% of the informants in our sample indicated that they did not use a manual for festschrifts or any written instructions, where it is described how to edit a festschrift. (There aren't any such manuals, as far as we know.) Rather all festschrift editors seem to be autodidacts. Some of them seem to know how to edit a festschrift due to former experience with

editing collections of articles. In 57% of the situations, one of the editors knew how to edit a collection of articles due to previous experience. In 36% (partly overlapping) the editors had consulted a colleague, who had already edited a festschrift. This suggests that festschriften are far from being a ritual that is established by automated repetition. Most performers of the action are not yet proficient in performing it when they start the process. They do it for the first time and have never been taught how to do so properly. The action itself is reinvented rather than repeated and each festschrift seems to possibly influence the production of any following volume. According to Leach (1966: 405), “the performance of ritual serves to perpetuate knowledge which is essential for the survival of the performer”. It is probably a very specific feature of the festschrift that its production is rather opaque and in most cases, only the product will serve as a basis for future performances.⁹

Acquiring the concept of a festschrift seems to be part of an incremental process of becoming more familiar with academic institutional facts. This is underlined by the results of a survey where 51 people from the University of British Columbia Department of Linguistics (34 undergraduate and 7 graduate students, 6 PhD students and 4 professors) were asked to provide a definition of a festschrift. None of the undergraduate students had an idea of – but some had very creative approaches¹⁰ to – what a festschrift is. Furthermore, it seems as if graduate students usually do not know what a festschrift is either, as only one out of seven was able to give a definition. PhD students are more likely to provide a definition, as only two from six informants failed. Finally, all the members of the faculty could easily and spontaneously describe what a festschrift is. Therefore, the longer the integration within the academic community, the greater the acquaintance with its customs and the greater the awareness of what a festschrift is. This is a clear hint at the institutional character of festschriften, as “they require human institutions for their existence” (Searle 1995: 2).

However, the fact that more than two thirds of the editors stated that they ‘completely’ (29%) or ‘rather’ (41%) edited the festschrift in their free time¹¹ lets us doubt whether festschriften can be termed institutionalized in academia. We are not aware of any cases where somebody received particular funding or a sabbatical for editing a festschrift.

5. Matters of manner

In the cases of rituals, it is not only that by performing a certain act (making a festschrift) we attempt to do something (honor or celebrate the honoree), but a major focus is also placed on the way something is done.

In ritual communication, of both the formal and everyday varieties, the manner of action is not merely instrumental in achieving public recognizability of the action's meaning. It is also itself made available for evaluation as a token of the actor's acquiescence to a constraint of social convention. (Enfield 2009: 57)

With respect to the manner of making a festschrift, we will consider discretion and turn-taking in more detail.

5.1. Discretion

It is a common feature of gifts that they are designated to be a surprise for the donee. The same is true for festschriften in most cases, as only 13% (four) of our informants declared that the festschrift they edited was no secret to the honoree from the very beginning. In their attempt to keep the festschrift a secret, editors elaborate strategies to conceal the whole process to the prospective honoree like using code words (44% of the editors), meeting in the dark (26%), telling the contributors not to reveal anything or not to spread the information, etc. Unfortunately, in only 56% of the cases, the surprise effect is accomplished, as there might be a colleague or some other person in the honoree's environment who mentions the festschrift to the honoree before the handover. In some of our colleagues' experiences, contributors acted inattentively, put the reference on the website, on their publication record or cited it in manuscripts. One editor responded to our question "Did you discover (e.g., on the Internet) a reference to a paper from your volume with the explicit indication 'A Festschrift for X' before the festschrift was handed over?" with complete lack of understanding for such behavior "That would not have been in accordance with the aim of achieving a surprise." Unfortunately, however, such incredible things happen recurrently and eventually corrupt the laborious efforts of the editors to preserve discretion.¹²

In this context, it is also interesting to point out that 46% of the editors in our sample did not congratulate the honoree on the occasion of his or her 64th (in some cases 59th) birthday. Regarding the fact that they are actually working towards the donation of a book on exactly that date, we can take for granted that everybody is quite aware of this date. Obviously, festschrift

editors tend to avoid giving the honoree the idea that they think of that date all the time.

Finally, we would like to note that the business of hide-and-seek is not in any way unique to festschrifts in academia. In peer-review and appointment committees, discretion is often a felicity condition for the validity of decisions taken and the institutionalization of discretion allows the actors to act effectively without threatening their own face or the face of others.

5.2. Turn-taking

In this section we will turn to a micro-analysis of interactions that are constitutive parts of the macro-process of making a festschrift. Given that a festschrift is a collection of papers that are brought together to honor someone, there are several competing interests that have to be taken into consideration. Who is invited to participate and according to what criteria are contributors selected? How can the topic be chosen to maximize the number of people that the editors think the honoree would be pleased to see as authors in his/her festschrift, without minimizing the chance of presenting a coherent (which means sellable for the publisher) volume?

According to our editors, issues concerning these questions can be perceived both as the greatest freedom or the greatest restriction in the context of making a festschrift. While many editors mention that the selection of the topic, the contributors, and the publisher was one of the most significant freedoms during the creation of the festschrift, there are editors who remember otherwise: “the restricted topic – therefore, not all former students and collaborators could contribute”, “names you cannot omit, though you hope they will not want to contribute”, “to accept even bad papers after having asked for them”, “difficulty of who to invite and not to invite”.

The decision of who to include as a contributor, which is also a major topic in Zillig (2004), is a potential source of conflicts in the making of a festschrift. In our questionnaire 7 of 31 respondents reported personal conflicts with persons who had not been included as authors. One respondent reported that the resonance was so unexpectedly high that the generally very good and innovative contributions had to be distributed on three entirely different volumes, which, in return, caused an unexpected increase of editorial work.

Finally, there seems to be a very clear understanding of the handing over of a festschrift. To the question “Does a festschrift have to be donated to X on a public occasion with many people present?” the vast majority answers ‘certainly yes’ (42%) or ‘rather yes’ (51%).

6. Conclusions

Whether festschrifts are rituals depends on the definition of ritual one follows. It should have become clear that rituals need not necessarily be empty: in social psychology, rituals are at the very basis of human nature, from the point of view of ethiology and grammaticalization, it is very likely that human language originates and evolves through ritualization, and in the development of infants, rituals, together with imitation, are fundamentals of the origin of human behavior. One thing that is common to rituals in almost all of their manifestations is that they need to be performed by somebody, usually in interaction with others, hence in social interaction. As Werlen (1984: 62) states, you need not to be fully convinced of a ritual for performing it. However, you have to act it out with your person. This certainly holds true for festschrifts.

However, the discussion in Section 4 has shown that festschrifts can be considered institutionalized only in some respects and that the component of expressivity is particularly difficult to assess since what is expressed and who expresses it often remains highly opaque considering that hidden allusions can noticeably blur the picture. Yet it is clearly evident that the factors action, expressivity, institutionalization, and manner are central for an understanding of the phenomenon festschrift.

The only unifying property of all festschrifts seems to be the editors' attempted illocution of honoring and celebrating a much-respected academic. Probably, it is the variable nature of the festschrift (see Section 2 above) that constitutes its main strength (comparable to influenza viruses) and may be one of the reasons why this particular genre exhibits a surprising continuity. Thus, the adaptivity of the phenomenon festschrift across time in a changing academic environment need not necessarily be interpreted as a weakness as suggested in Wirth (1995) and Wardenga and Wirth (1995).

A particular feature of the ritual of making a festschrift is that most of the knowledge about performing the ritual has to be inferred from given products of such rituals. The making itself is a highly opaque process. Only the violation of the conventions about the manner of performing it, e.g. the violation of the discretion, can lead to sanctions against the persons involved in performing the ritual.¹³

Festschrifts appeal to the social competence of actors in academia. In many areas of academic life, the only thing that counts is scientific excellence. Social intelligence is no asset for journal publications and for many universities social skills are no criteria when hiring new staff. A festschrift, however, cannot be organized by solitary loners. As the interactions con-

cerning festschrifts seem to have a component of Malinowski's (1923) phatic communion (see also Senft 2009: 82), they are training units for cultivating interaction in an environment where interaction would be crucial for the prosperity of the community, even though it is generally not demanded from individuals. Since the interaction of actors in academia is of crucial importance also for teaching, it is very likely that students can actually profit from the making of festschrifts indirectly, although most of them do not even know what a festschrift is.

Even though the making of a festschrift can be considered as performing a ritual to some extent, each edition of a festschrift reinvents the procedure and adds new constituent parts to the common knowledge to be perpetuated. This is nicely expressed in a poem by the Bernese troubadour Mani Matter (2011), with which we conclude this paper:¹⁴

<i>tradition</i>	<i>tradition</i>
was unsere väter schufen	what our fathers created
war	was
da sie es schufen	when they created it
neu	new
bleiben wir später	to remain later
den vätern	to the fathers
treu	true
schaffen wir neu	let us create anew

Notes

1. This paper has been written in our free time. We apologize to our families. We are grateful to Adrian Leemann and to three anonymous reviewers for many valuable comments and suggestions for reformulation. Thanks to all our anonymous informants. Finally, we cannot conceal that we would have missed some of the sources without the German Wikipedia article "Festschrift" (<http://de.wikipedia.org/w/index.php?title=Festschrift&oldid=85480713>, date of access 10.4.2011).
2. An anonymous reviewer criticizes that we do not consider the prefaces and introductions in festschrifts along with the references to the honorees in festschrift articles. The reviewer argues that "the making of" in the title of our paper is mistaken because the work itself and the event of handing it over are integral parts of the ritual. We do not claim in any way that the underinvestigated topic of the ritual character of festschrifts is explored in any exhaustive way in this paper. However, we aim at emphasizing in particular the activity and back-

stage component of the ritual. This is exactly why the most obvious data source – the available products themselves – were not considered an ideal starting point and why we did not undertake any discourse studies of what festschrift editors write explicitly in festschriften. By the same token we excluded an investigation of the reactions of the honorees which is not part of the “making”.

3. This is well in line with the comment by an anonymous reviewer that this paper could not be printed as a serious contribution in a linguistic journal.
4. According to Hawkins (1978), ‘associative anaphora’ are undoubtedly the most frequent use of the definite article *the*: “It appears that the mention of one NP, e.g. a wedding, can conjure up a whole set of associations for the hearer which permit the bride, the bridesmaids, etc.” (Hawkins 1978: 123).
5. Publishing houses have an ambivalent relationship towards festschriften. Our publisher did not want the word “festschrift” to appear in a subtitle to the volume because this had “turned out to be very mischievous in the past”. It was not possible to receive any additional information what this meant in more concrete terms. However, there was no problem to make it clear with a dedication that the volume is a festschrift. Although terms such as “festschrift” and “papers in honor of” tend to disappear from titles at least as far as high prestige publishers are concerned, it is still obvious for virtually all parties if a book is a festschrift. Some library catalogues note if a book is a festschrift even if this is not made explicit in a subtitle. Libraries are an important target group for publishers, hence, obviously omitting the term “festschrift” in titles cannot have the goal of deluding libraries. The major problem seems to be that there is no simple word for “a festschrift which is at the same time a thematically coherent peer-reviewed volume”. We guess that this is exactly what is meant if a festschrift does not contain that word in its subtitle.
6. This type of festschrift is defined as the “festschrift that terminates the employment on occasion of the retirement (*dienstbeschliessende Emeritierungs-festschrift*)” (Zillig 2004: 22).
7. Such a dyadic bond, typical of the traditional personal alliance system in the Philippines, can be based on different reasons: someone saved another person’s life, provided employment or made it possible for someone to become educated. All these different gifts “initiate a long-term reciprocal interdependency in which the grantor of the favor can expect help from the debtor whenever the need arises” (Dolan 1991: 89). *Utang la loob* relations can last for generations and all favors from the debtor can only be considered attempts to repayment.
8. In most cases these expectations are met, but there are no guarantees. In one of 29 answers X complained to an editor directly and in one of 28 answers indirectly. A reason for complaint was that “people who – in X’s opinion – would have been important, had not been asked to contribute”.
9. This is also in line with the comments of our informants. They stated that they knew how to edit a festschrift “because I had read lots of festschriften before” or “I studied a number of festschriften to find inspiration” etc.

10. We are extremely sorry that we can only provide a few examples: “A fest-schrift is a message received through fest waves, similar to tv and x-ray waves, but at a much higher frequency. Fest waves have the power to communicate thought, emotion and winning lottery ticket numbers.” or “I would imagine this word to mean a scaled water dragon that cannot close its mouth fully because this is the sound it makes while splashing though the water.” or “It is clearly evident that a Festschrift is a type of written script that appears when a non germanophone attempts to understand the semantic referent of a word by splitting its component parts into a part the subject thinks he knows, and the part of which he has no idea. So perhaps it’s about building a new discourse.” or “Some kind of schism perhaps?” or “I’m not sure, but as a German minor, I would guess that it has something to do with accurate or correct writing.”
11. It is beyond the scope of this paper to clarify the notion of “free time” in academia.
12. In the case of the festschrift at hand, the secret was revealed to the honoree prematurely on two occasions. The honoree discovered the reference of a forthcoming article on a website of one of the contributors (even though the editors had explicitly asked them not to do so before the handing over and even though the editors had regularly googled for the reference). Additionally, one contributor (from the same department as the honoree!) had forgotten a copy of the article in the printer which the honoree then unfortunately found.
13. It is not clear, and we have not investigated, what kind of sanctions might be expected in the case of failure of a festschrift. However, a diffuse fear of sanctions obviously plays some role in the editing process.
14. On a related note, in our questionnaire convenience sample 86% of the persons to be honored were male.

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Part II: Cross-linguistic and language-internal diversity

Language description and linguistic typology

Fernando Zúñiga

1. Introduction

The past decade has seen not only a renewed interest in field linguistics and the description of lesser-known and endangered languages, but also the appearance of the more comprehensive undertaking of language documentation as a research field in its own right. Parallel to this, the study of linguistic diversity has noticeably evolved, turning into a complex and sophisticated field. The development of these two intellectual endeavors is mainly due to an increasing awareness of both the severity of language endangerment and the theoretical significance of linguistic diversity, and it has benefited from a remarkable improvement of computing hardware and software, as well as from several simultaneous developments in the worldwide availability and use of information technologies.

The important recent development of these two subfields of linguistics has certainly not gone unnoticed in the literature. When addressing the relationship between them, however, most scholars have concentrated on how and how much typology depends on the data provided by descriptive work, as well as on the usefulness and importance of typologically informed descriptions (cf. e.g. Croft 2003, Epps 2011, and the references therein). Rather than replicating articles that deal with historical issues and questions raised by the results of descriptive and typological enterprises, the present paper focuses on methodological issues raised by their respective objects of study and emphasizes the relevance of some challenges they face. The different sections address the descriptivist's activity (§2), the typologist's job (§3), and some selected challenges on the road ahead for the two subfields and their cooperation (§4).

2. From data collection through language description to language documentation

A well-known article by Pamela Munro defines field linguistics as “the collection of primary linguistic data on the basic grammatical facts of a

relatively little studied language in a natural setting from ordinary speakers, and [...] the analysis and dissemination of such data” (2001: 130). The activities thus delineated are at the core of modern language descriptions, which are customarily understood as data collection plus data description (i.e., linguistic analysis) and meta-description (i.e., information and some analysis of the origin and status of both the data and the description). In turn, language descriptions constitute an indispensable part of language documentation projects. The latter commonly include larger amounts of (written or spoken) texts – often with sociolinguistic and anthropological analyses, or at least annotations and comments – and have to address issues related to copyright, dissemination, and storage.

Instead of concentrating on what distinguishes these three concentric enterprises (i.e. field linguistics, language description, and language documentation), I will concentrate on their core here. I will also assume that the usual and pertinent focus on lesser-known languages does not exclude, say, comparable activities conducted on Mandarin Chinese in Beijing or North American English in Chicago from being considered field-linguistic.

Present-day descriptivists most probably agree on the fact that their activity is directed toward the study of language structure and language use. Nevertheless, even though such an undertaking centers on the representation of data and underlying patterns leading to the production of dictionaries and grammars, current descriptive enterprises differ from their traditional counterparts, especially when framed in documentation projects dealing with lesser-known endangered languages. If they are to be state-of-the-art, they focus on primary data without favoring particular genres or text types, have an explicit concern for both accountability and long-term preservation of the data, and are the product of interdisciplinary teams working in close cooperation with and direct involvement of the speech community (Himmelmann 2006: 15). I will comment in some detail on the focus on primary data in what follows.

Primary data can be gathered from either direct observation or experimental procedures (or experiment-like procedures, like elicitation). Advantages and disadvantages of different primary sources are customarily discussed in courses/textbooks on linguistic field methods; cf. Newman and Ratliff (2001), Gippert, Himmelmann, and Mosel (2006), Crowley (2007), and Bowern (2008). By contrast, secondary data consist of material found in specialized studies and reference grammars. The current consensus in descriptive work is that such sources should not constitute the sole, or principal, foundation on which the description is based.

An issue less frequently addressed than the advantages and shortcomings of questionnaires and corpora, is the fact that “raw” primary data as found in an audio/video recording of a particular situation invariably undergo a process of interpretation before being conveyed to the reader of a traditional language description. Never is such a reader exclusively confronted with unfiltered data presented without any comments or explanations. Even if an author addressing morphosyntactic issues manages to avoid a particularly opaque terminology and framework-specific analytical machinery, the transcription of any single sentence of the object language presupposes some phonological analysis, as well as some analysis of the phonological and grammatical wordhood of the units that constitute the sentence. More often than not, of course, the data are presented via the analytical apparatus chosen by the author of the description in order to represent the alleged fundamental regularities of linguistic structure. It is worth mentioning that the situation is somewhat different with recent comprehensive language documentation projects, which sometimes do include the presentation of raw primary data in different audio/video formats.

By a different token, the analyst must make numerous decisions concerning the status granted to the particular situation in which language has been used. Many of these choices may be explicit (e.g. “this is colloquial language / allegro speech,” “such an utterance is felicitous under the following circumstances,” “most speakers agree on these grammaticality judgments”), but the readers of the description have to rely on the descriptivist’s judgments, i.e. his/her interpretive filters. Available descriptions differ greatly as to the amount of meta-information provided; therefore, they also differ as to how reliable they are as sources of material that is readily comparable across languages.

Finally, the focus on primary data is not the only thing related to data sources that has changed over the last decades. Wälchli (2007) and Epps (2011) rightly point out that intralinguistic structural variation has tended to be underrepresented in traditional descriptions, which have favored normalized representations of typical patterns and neglected unsystematic or infrequent structures. (This is related to the bias toward particular genres and texts found in less recent descriptions, especially those of languages that have a written tradition. Narrative written texts produced by arguably influential male adults have tended to be overrepresented, for example, as data source for the traditional descriptions of classical languages.) Recent studies emphasize the need for less restrictive data collection techniques that allow “to support claimed generalizations with multiple empirical sources

of converging evidence, including observations of ecologically natural language use” (Bresnan 2007: 302).

3. Linguistic typology

The systematic study of crosslinguistic variation is not a new field, but the way typology is conceived of and practiced has changed markedly since its beginnings. The founders of the discipline in the early 19th century, viz. the Schlegel brothers and Wilhelm von Humboldt, were primarily concerned with the morphological classification of languages.¹ Greenberg (1963) and his many followers were also concerned with phonetics, phonology, and syntax (particularly, but not exclusively, constituent order), and most modern practitioners have gradually moved away from so-called holistic classifications toward the study of partial subsystems of language. While early thinkers like Steinthal, Finck, Lewy, and Mathesius conceptualized crosslinguistic classification as formally and causally connected to characterology – note that the French 17th-century interest in *le génie de la langue* is famously present as “basic plan” or “structural ‘genius’” in Sapir’s influential work (1921) – , 20th-century typology started focusing on individual domains of language structure.² In recent decades, the emphasis has also shifted from attempting to identify absolute universals (i.e. statements that hold true for all languages without exceptions) to discovering and explaining statistical universals (i.e. statements that hold true for many languages). Lastly, typology has traditionally concentrated on morphosyntactic as well as phonetic/phonological diversity and has ventured into the systematic exploration of lexical patterns comparatively recently; see Brown (2001), Koch (2001), Koptjevskaja-Tamm, Vanhove, and Koch (2007), and Haspelmath and Tadmor (2009) for some discussion and Evans (2011) for a more general picture.

Even though a primary concern of present-day typology is the categorization of linguistic phenomena into types, some scholars think of the present and the future of the discipline in terms that are less restrictive than such a textbook definition would suggest. Nichols (2007: 236), for instance, says that

what we call typology is not properly a subfield of linguistics but is simply framework-neutral analysis and theory plus some of the common applications of such analysis (which include crosslinguistic comparison, geographical mapping, cladistics, and reconstruction).

Similarly, Croft (2007: 80) says he follows Greenberg in considering typology “an empirical, i.e. scientific, investigation into the nature of language. [...] Typology is a theoretical approach to language, with increasingly well-established methods and results.” Lazard (2005: 1–2) pertinently quotes Hjelmslev (1970: 96) with respect to the importance of typological undertakings: “An exhaustive linguistic typology is, in fact, the biggest and most important task facing linguistics. [...] Only through typology does linguistics rise to quite general viewpoints and become a science.”

In this light, it is perhaps unsurprising that Croft (2003: 1–2) presents the following threefold categorization of typological inquiries: what is at the center of attention are classifications, generalizations, and explanations. Typological classification is concerned with structural types (formerly of languages, nowadays of small-scale phenomena, as mentioned above). The second kind of typology examines systematic crosslinguistic patterns, and the third is an “approach to linguistic theorizing, or more precisely a methodology of linguistic analysis that gives rise to different kinds of linguistic theories than found in other approaches [such as American structuralism and generative grammar, FZ].” While these three kinds of typology can be thought of as stages in the development of the discipline (roughly: early, Greenbergian, and modern), they also correspond to partial stages of any empirical scientific analysis, viz. the observation and classification of phenomena, the generalization over the observations and classifications, and the explanation of the generalizations.

Finally note that Bickel’s (2007: 248) characterization of typology is threefold like Croft’s, but it reflects a noteworthy recent development path of the discipline:

Modern typology is a discipline that develops variables for capturing similarities and differences of structures both within and across languages (qualitative typology), explores clusters and skewings in the distribution of these variables (quantitative typology), and proposes theories that explain the clusters and skewings (theoretical typology).

Such a view casts the net more widely in at least two directions: typology is now explicitly seen as studying both crosslinguistic and intralinguistic variation, and the study of “generalizations over observations” is not limited to the study of linguistic phenomena but must include elements studied by disciplines concerned with geography, history, sociology, etc. and the use of quantitative methods of inquiry. Crucially, Bickel (2007: 239) suggests that

typology has begun to emancipate itself from [one of the same goals as generative grammar, viz. to determine the limits of possible human languages and, thereby, to contribute to a universal theory of grammar] and to turn from a method into a full-fledged discipline, with its own research agenda, its own theories, its own problems.

4. Objects of study, methods, and challenges

This section addresses a number of questions related to current language description and linguistic typology with respect to their objects of study, the methods they employ, and some challenges they face. Rather than giving an exhaustive treatment to these far-reaching domains, I will limit myself to mentioning some selected issues raised by what Epps (2011) has called the “continuing partnership” between documentation and typology (§4.1), as well as some problems that arise in the context of the three fundamental methodological domains mentioned by Croft (2003: 8–30), viz. sampling (§4.2), data sources (§4.3), and crosslinguistic comparison (§4.4 and §4.5). Finally, Subsection 4.6 points out two further challenges faced by typological studies: taking intralinguistic variation into account and explicitly incorporating variation as something in need of explanation.

4.1. Some basic challenges faced by the “continuing partnership” between documentation and typology

Theoreticians and practitioners regard language documentation and linguistic typology as organically related in several ways. First, the two subfields have benefited from each other; not only is Epps’s discussion of Hup D[ifferential] O[bject] M[arking] in her descriptive grammar, for instance, informed by the typological literature on the topic, but it also contributes to a more refined typology via its account of the role played by nominal number marking (Epps 2008: 170f, 2009). Second, “[i]t is documentary linguistics that gives typologists access to these usage-based data; at the same time, typological interest in such diverse phenomena highlights the need for documentation to be thorough, broadly inclusive, and ethnographically rich” (Epps 2011: 642). Lastly, with respect to the current state of both subdisciplines, Epps says that

[t]he goal of refining our typological focus is well served by contemporary documentary methodology, which stresses collection of a large and diverse

corpus. [...] [D]ata collection and analysis must focus on language *in use*, and takes the perspective that “linguistic meaning cannot be treated separately from the ‘encyclopedic’ content of the relevant culture and society” (Hudson 2007: 7). [...] Such an approach is essential if we are to achieve a more complex typological understanding of diversity. (Epps 2011: 639; emphasis in the original)

Thus, descriptivists and typologists conceive their fields as fundamentally entwined: hardly anyone would deny that poor descriptions seriously compromise typological investigations based on them, and that shaky typologies at best fail to inform, and at worst misguide, the recording of individual language structures. This poses an evident challenge for authors, publishers, librarians, and archivists: not only language documentation materials but also typological studies (e.g. Shopen 2007) must be as solid, and as widely available, as possible.

There is reasonable consensus on what counts as good descriptive material: the description must meet the dual challenge of enabling and facilitating crosslinguistic comparison while remaining “true to the languages themselves, without forcing them into ill-fitting predetermined categories” (Epps 2011: 648). Similarly, it is generally acknowledged that sound typological research must not oversimplify the “intricacies and complexities” that characterize particular linguistic structures. In practice, of course, this may not be an easy task. Descriptive grammars are multi-purpose artifacts, and they are used by theoretical linguists of all persuasions, by typologists, and by people involved in language revitalization and teaching. Moreover, descriptive work is usually consulted by scholars belonging to different generations – unlike many typological studies (and, to some extent, other products of language documentation), which can be rather short-lived.

Let me conclude this subsection by noting that it is possible to investigate the continuing partnership between typology and description by (i) conceiving the three concentric dimensions of the former mentioned in §3 as related in various ways to the three concentric enterprises of the latter introduced in §2, and (ii) studying how these dimensions interact and inform one another. Typology proceeds from variables and classification through the analysis of clusters and generalizations to the explanation and construction of theories. In turn, documentation proceeds from data collection and storage through data description and meta-description to the analysis of the documentation as a whole. Against this background and in addition to the example of Hup DOM given above, Chapter 7 of Joseph’s descriptive grammar of Rabha (2007) can be used to illustrate the most

straightforward feed-back between classification and description and what some comprehensive present-day grammars look like: the 170-page-long chapter is a “correlative analysis” of Rabha and two other closely related Tibeto-Burman languages, viz. Bodo and Garo. The phonology, the noun classes and the noun morphology, and the verb morphology of these languages are subjected to detailed comparative scrutiny there, which in turn yields illuminating insights for their diachronic, synchronic, and typological characterization.³

4.2. Data sources

The issue of data sources employed in typological inquiries is related to the question of data sources used for language documentation, which was mentioned in Section 2 above. Croft concludes that “[n]o source of data – native consultants, actual texts or descriptive grammars – is perfect; but any and all sources can provide relevant data when used judiciously” (2007: 30). He aptly points out some of the shortcomings of such sources; data via traditional elicitation techniques do not need to accurately represent actual language use, the design and the application of good elicitation questionnaires are difficult, few available texts include face-to-face spoken conversation, and descriptive grammars show biases of different kinds and even gaps, but are better than secondary sources.

An example from my own descriptive work can illustrate some difficulties that have been largely neglected until recently; other practitioners will have no trouble recognizing analogous or related phenomena in their work. Mapudungun is an Amerindian language spoken in Chile and Argentina, and has been in contact with the local varieties of Spanish for several centuries. Both Mapudungun and Spanish show DOM, i.e., nonagentive arguments of transitive clauses are marked differently depending on some of their properties. To be sure, there are some structural differences to be noted; Mapudungun has no case or adpositional marking of core syntactic arguments comparable to the Romance functional equivalents, and DOM appears as a verbal suffix *-fi* alternating not only with a null marker in direct verb forms but also with nonzero markers in inverse verb forms; Spanish DOM, by contrast, appears formally as the opposition between the preposition *a* and zero:

(1) Mapudungun and Spanish DOM (p.k.)

- | | | | | | |
|------------------------------|--------------|----|----------------|---------|------------------------|
| a. <i>Pe-fi-n</i> | <i>Juan.</i> | / | <i>Vi</i> | | <i>*(a) Juan.</i> |
| see-3O ₁ -1SG.IND | J. | | saw[.1SG] | to | J. |
| 'I saw Juan.' | | | | | |
| b. <i>Pe-Ø-n</i> | <i>kura.</i> | / | <i>Vi</i> | | <i>*(a) la piedra.</i> |
| see-3O ₂ -1SG.IND | stone | | saw[.1SG] | to | ART stone |
| 'I saw the stone.' | | | | | |
| c. <i>Pe-e-n-mew</i> | <i>Juan.</i> | / | <i>Juan me</i> | | <i>vio.</i> |
| see-INV-1SG.IND-3A | J. | J. | 1SG.O | saw.3SG | |
| 'Juan saw me.' | | | | | |

What is important here is that the conditions under which DOM is found appear to be quite different in both languages. The examples in (1) suggest that objects with human referents trigger the differential marking while those with nonhuman ones do not, and that the conditions governing the direct/inverse opposition in Mapudungun account for the additional difference between the structures. Nevertheless, factors related to the pragmatic status of the arguments and to discourse structure are of paramount importance in Mapudungun, whereas animacy and specificity seem to be the main factors governing Spanish DOM (even though some lexical issues make the Spanish picture more complicated and semantic and referential factors do play a role in Mapudungun as well; cf. Zúñiga 2010 and references therein for details.) Roughly, specific human third persons trigger DOM and inversion when they are especially salient objects and subjects respectively, but typically only at key inflection points in the text, where these referents are to be (re)activated.⁴

The exploration of how Mapudungun DOM works is relevant for the assessment of data sources on a number of grounds. Older grammatical descriptions of Mapudungun pay almost no attention to pragmatic and discourse factors. Everyday conversation shows only sporadic occurrences of *fi*-marked verbs and inverse forms corresponding to 3↔3 interactions, whereas traditional narratives like the *epew* (in which numerous 3↔3 verb forms appear, some of which are instances of DOM or inversion) are relatively difficult to elicit.⁵ Questionnaires and the direct, possibly even experiment-prompted, elicitation of isolated clauses conducted in Spanish, even in carefully provided contexts, will seldom be useful, since the danger of obtaining a distorted use of DOM forms is rather high (either too many under the influence of the Spanish prompt or too few due to hypercorrection). Elicitation conducted in Mapudungun will probably also miss the fact

that the decisive factors triggering the alternations are related to discourse factors visible only in longer texts.

A better understanding of Mapudungun DOM leads, among many other things and together with relevant evidence from other languages (cf. Zúñiga 2007, Iemmolo 2010, and Dalrymple and Nikolaeva 2011), to a refined typology of case marking, agreement, and alignment that integrates not only properties of (referents of) NPs and clause-level phenomena but also discourse-level or at least text-level phenomena. Thus, the emphasis on useful primary data in this context is of paramount importance for the adequate description of numerous lesser-known languages, a rethinking of familiar accounts of DOM in languages like Spanish, Turkish, or Persian (where the connection to discourse factors has been occasionally noted, cf. chapter 6 in Comrie 1981), and a better typology of grammatical relations.

4.3. Sampling

Quantitative, especially statistical, methods have become a widely used tool in present-day typology. It should not come as a surprise, therefore, that the discipline has to solve the nontrivial sampling problem, which is indirectly related to language description via language classification. In order to minimize several kinds of bias (genetic, areal, typological, and cultural), typologists employ sampling techniques adapted from those used in other disciplines; see Bakker (2011) and the references therein for details and discussion. A much more interesting dimension of the sampling problem is *directly* related to language description via the definition of the unit of study – an issue that typology has begun addressing in a principled way only relatively recently. For instance, work by Bickel (2011) suggests that, for some typological questions related to referential density and case patterns, it may be more relevant to look at units that are either higher or lower than the dialect/language unit (i.e. language groups within a family or clusters of particular idiolectal registers). The twofold question of how to best sample what kinds of linguistic units is likely to be addressed by significant and illuminating studies in the near future.

4.4. Crosslinguistic comparison I: Basics

The issue of crosslinguistic comparability has a long-standing history in the humanities and has received renewed attention in recent typological studies. Perhaps somewhat expectedly, what is at the center of the current de-

bate is *how* crosslinguistic comparison should best proceed, rather than *whether* it is feasible at all.

According to Croft, for example, “the variation in structure makes it impossible to use structural criteria, or only structural criteria, to identify grammatical categories across languages” (2003: 13), and the solution lies in the use of “external” (i.e. semantic and pragmatic) definitions. In Croft’s view, the “standard research strategy” in typology can be described as follows. First, the analyst determines the particular semantico-pragmatic structure or situation type to be studied. Second, s/he examines the morphosyntactic strategies employed to encode that situation type in different languages. Finally, s/he looks for dependencies between the constructions found and other linguistic factors (“other structural features, other external functions expressed by the construction in question, or both”) (Croft 2003: 14). Croft also acknowledges the validity of “derived” structural definitions for the constructions in question (i.e. those including semantic-pragmatic components and morphosyntactic elements); the choice between them and purely external definitions is determined by the purpose of the study. For example, the appropriate definition of the subjunctive is purely external for an exploration of the realm of modality but should be derived if the phenomena to be covered are the different structures of complex sentences (Croft 2003: 18).

At first sight, Lazard (2005) might seem to disagree with Croft by observing that both structural criteria and “semantic substance” are language-specific. He follows the Saussurean view of thought as “amorphous” before it is structured into (language-)specific signifier/signified correspondences and proposes to resort to a particular type of “intuition”: the analyst must make so-called arbitrary conceptual frameworks (ACFs) the point of departure for typological research. These consist of explicit definitions and/or propositions about linguistic and/or extralinguistic phenomena, are arbitrary (i.e. freely chosen by the analyst) but ideally informed by “a wide experience of different languages.” They preferably concern limited domains of grammatical systems or lexical fields, are research tools rather than empirically falsifiable hypotheses, and are provisional (i.e., they should be replaced by other ACFs if they do not lead to interesting discoveries) (Lazard 2005: 8).

Nevertheless, Lazard’s (2005: 16) discussion of grammatical voice makes it clear that he regards the procedure employed by Croft (2001: 283–319) when charting the “conceptual space” of that category as sound:

The author thoroughly investigates the morphosyntactic data, brings them together with a well defined conceptual space, and arrives at the discovery of an accurately formulated invariant, which consists of a constant relationship emerging from the diverse shapes of the correlation between structure and function or, in another terminology, between signifiant and signifié.

Besides the still somewhat controversial point concerning the nature of universals (“invariants are neither forms nor meanings; they are relationships appearing in the correlation between forms and meanings,” p. 16), it is important to observe that Croft uses, in addition to morphosyntactic concepts, the notions of agent and patient, which are not considered to be language-specific and are therefore viable for the exploration of phenomena like (anti)passivization, (anti)causativization, and applicativization.

The existence and the status of the *tertium comparationis* have been addressed in more detail by Haspelmath in a series of recent studies (2007, 2009, 2010). Contrary to what is customarily taken for granted in Chomskyan crosslinguistic work, Haspelmath claims that pre-established structural categories of grammar do not exist: it is the job of neither language description nor linguistic typology to attempt to create, motivate, or discover such entities. Rather, “[I]language describers have to create language-particular structural categories for their language” (2007: 125); with respect to the notions used in typology, morphosyntactic comparison must be “semantically based” (p. 126). Instead of allegedly spurious crosslinguistic categories, typology must (and customarily does) employ “comparative concepts,” as detailed in Haspelmath (2009). These are specifically designed for comparison purposes and defined via concepts potentially applicable to any human language, viz. conceptual-semantic concepts, general formal concepts, and other (more primitive) comparative concepts (Haspelmath 2010).

Rather than discussing the definition and the nature of the best *tertium comparationis* in detail here, I want to highlight the fact that such fundamental questions are currently being debated. While some scholars argue that language-individual description and crosslinguistic comparison use related but different sets of concepts (e.g. Lazard 2006 and the references given above of work by Haspelmath), other typologists contend that

typological survey is identical to language-specific analysis and consists in detailed description of properties. To the extent that we learn more about language specific properties, the better can we define fine-grained typological variables. And such fine-grained variables provide in return the ideal questionnaires for fieldwork. (Bickel 2010: 93)

Such a view naturally leads to a direct connection between descriptive data and typological data (i.e. to something different from a derivative relation between them, like in Haspelmath's comparative concepts, as well as different from a sophisticated isomorphism between data/concepts belonging to different realms, like in Seiler's UNITYP framework, cf. Seiler 2001). Several typological databases actually operate in this fashion, linking descriptive and typological data/concepts in a straightforward way (e.g. the Leiden Stresstyp project on metrical systems and the Berkeley/Zurich Autotyp project on morphosyntax and word domains).

4.5. Crosslinguistic comparison II: Some challenges

Bickel (2007) pertinently emphasizes that typology has to find ways to capture, measure, and elucidate linguistic diversity rather than reducing it and thereby potentially explaining it away. Systematic variation across languages can indeed become overwhelming, and much of current scholarship in the field is devoted to developing methods that enable us to adequately deal with crosslinguistic diversity. To my knowledge, however, even though linguists habitually acknowledge the importance of systematic (and less systematic) variation, typologists have just started to deal with the issue in a principled way.

In this context, let me comment on the comparison of (pro)nominal paradigms across languages. The case systems of Slavonic, Indo-Aryan, and Kartvelian languages, for instance, are often compared in run-of-the-mill typological studies, but the parameters at the center of attention are usually semantic and syntactic. The relevance of questions related to pragmatics (and, more widely put, text and discourse structure) has been incorporated into the analysis comparatively recently,⁶ and aspects of case morphology that touch upon sociolinguistics and other cultural factors have been neglected unless they are prominent, like in Samoan.⁷

Even in the absence of such factors, comparability is not always as mechanical as textbook introductions may suggest. Person-based ergativity splits, for example, can be compared across languages by calculating an index that quantifies the degree of ergativity. (This is the kind of question, or rather one kind of analytic tool, some quantitative studies currently gravitate towards.⁸) Standard Basque first and second person pronouns, for instance, show an ergativity index of 80% (=4/5), since four out of five items distinguish an absolutive (S/O) and an ergative (A) form (Table 1).

Table 1. Selected Basque pronouns (p.k.)

	O	S	A
1SG	<i>ni</i>		<i>nik</i>
2SG ₁	<i>hi</i>		<i>hik</i>
1PL	<i>gu</i>		<i>guk</i>
2SG ₂	<i>zu</i>		<i>zuk</i>
2PL		<i>zuek</i>	

By contrast, Dyrirbal shows an ergativity index of 0% (=0/6) for these pronouns, since all items pattern accusatively (Table 2).

Table 2. Selected Dyrirbal pronouns (Dixon 1972: 50f.)

	O	S	A
1SG	<i>ɲayguna</i>		<i>ɲadya</i>
1DU	<i>ɲalidyina</i>		<i>ɲalidyi</i>
1PL	<i>ɲanadyina</i>		<i>ɲanadyi</i>
2SG	<i>ɲinuna</i>		<i>ɲinda</i>
2DU	<i>ɲubaladyina</i>		<i>ɲubaladyi</i>
2PL	<i>ɲuradyina</i>		<i>ɲuradyi</i>

Note that an adequate understanding of what such an ergativity index represents may be more elusive than it appears at first glance. For example, paradigms may not be equally complex: Basque shows two 2SG forms but lacks the specific dual forms found in Dyrirbal, so actually more items could align in different ways in the latter language than in Basque. But even if both paradigms had the same number of *bona fide* items, measuring the degree of ergativity of both paradigms would be computationally simple but conceptually nontrivial. What are the exact limits of the paradigm (and, somewhat more vexingly, can the analyst afford not to postulate them)? Many grammatical descriptions of Basque include the third person items *hura* (ABS.SG), *hark* (ERG.SG), and *haiek* (PL) in some versions of the pronominal paradigm (in which case the complete paradigm would have an ergativity index of 5/7 = 71.43%), but these elements are actually distal demonstratives. If all three demonstratives were included – they all pattern like the distal item – , the ergativity index would be 7/11 = 63.63%. Similarly, Dyrirbal has the absolutive noun class markers *bayi*, *balan*, *balam*, and *bala*, as well as their ergative counterparts, and from Dixon's description it is clear that they are both like and unlike first and second person

pronouns in several ways, rendering their inclusion in the paradigm as third person pronouns problematic. (There are additional elements in paradigmatic opposition to these noun class markers, which differ from them along the dimensions of location and visibility; cf. Dixon 1972: 45). Lastly, recall that the Silverstein hierarchy used to make sense of such ergativity splits includes nouns, which pattern like the third person markers in Dyirbal but unlike the demonstratives in Basque, since in the latter language nouns distinguish absolutive from ergative forms not only in the singular but also in the plural. As a consequence, the use to which such an ergativity index is put needs to be discussed in detail if the tool is to be helpful and, possibly, powerful.

Such interpretive problems are not limited to demonstratives and noun class markers and cast some doubt on the usefulness of the simple version of the index presented at the outset of this discussion. The Basque second person singular pronoun *hi(k)* is actually unlike its default counterpart *zu(k)* in that the former is not only obsolescent in some varieties of the language but also heavily restricted on social and pragmatic grounds (as are the allocutive verb forms that mark gender of the *hi(k)*-addressee even if s/he is not a semantic argument of the verb). Roughly, elderly men in rural areas talking among themselves who are close to each other use them most often, while young women in urban areas who are strangers use them most seldom (Amorrortu 2003: 144f). Similarly, is French *on* ‘one, we’ to be considered as well as *je* ‘I’, *tu* ‘you (SG)’, etc. for purposes of comparing case/agreement phenomena? (In the terms phrased by Munro in the definition quoted at the beginning of Section 2, just what are the “basic grammatical facts” of French for the purpose of crosslinguistic comparison here?) More generally, are imperfectly grammaticalized demonstratives or lexical NPs part of the paradigm? Supposing we can reach a reasonable consensus on how to delimit the paradigms in the languages under study, how should we weigh the different forms that constitute them: based on their frequency, on their degree of grammaticalization, or evenly?

For some varieties of Brazilian Portuguese, for example, the latter option would mean that obsolescent *tu* ‘you (SG)’ and robust *ele* ‘he’ are treated on a par, which has advantages for some typological questions but possibly disadvantages for others, like those related to language change. A similar argument applies to the varied and fairly complex use of *voseo* forms in both pronominal and verbal paradigms of numerous varieties of Central and South American Spanish – all of which raises the issue of meaningfully delimiting the particular language varieties, including regis-

ters, under study. For example, the pronoun *vos* ‘you (SG)’ is more widely used in the varieties of Spanish spoken in Buenos Aires and surrounding areas than in those of Santiago de Chile or Caracas (i.e., it is used by speakers of nearly all sociolects in numerous contexts where the latter varieties have *tú* instead). This would arguably justify including *vos* in the River Plate Spanish paradigm, perhaps even at the expense of *tú*, while its status in the Chilean and Venezuelan varieties would be more clearly debatable.⁹ In Munro’s terms, this amounts to a thorough and comprehensive account of the “natural setting” in which the language is used by “ordinary speakers,” including questioning what counts as natural setting, ordinary speaker, and even “the language.”

I do not want to suggest that the way descriptive studies and morpho-syntactic typology have dealt with person, number, gender, case, and agreement in the recent past is useless or fundamentally flawed. Rather, my point is simply that it is time for descriptivists to document and discuss in greater detail what has been excluded and/or neglected in order to arrive at the construct called “language X.” And even more importantly, it is time for typologists to incorporate into their accounts a number of well-known linguistic phenomena hitherto abstracted from. The availability of ever-improving technical resources and the conceptual development of the fields make such steps not only possible but also welcome.

4.6. Further challenges for linguistic typology

As stated repeatedly above, not all challenges to linguistic typology come from issues related to crosslinguistic comparability. Intralinguistic diversity, which has long been neglected in both description and typology, is equally important. Although current documentation projects can help remedy this situation by being less restrictive than their predecessors, linguistic studies face a nontrivial threefold challenge in this respect. First, it is not enough to document as much within-language variation as possible in current and future projects; within-language variation also needs to be studied in endangered languages that have already been described. Second, and more fundamentally, descriptive and theoretical linguists have to refine our present understanding of intralinguistic variation phenomena based on both well-known and lesser-known languages. Third, typologists must address the question of comparability not only of patterns but also of variation of patterns.

The latter challenge is a more complex side of the diversity problem, and it means that typology needs to venture into deeper waters in order to adequately ascertain and explain the nature of intralinguistic and crosslinguistic variation. Both descriptivists and typologists are aware of the significant variation languages can display; the challenge consists in contributing to our knowledge of such variation not only by documenting it but also by integrating it into our accounts of language diversity as what it is: something in need of explanation. In other words, not only do we need to introduce relevant phenomena that are currently missing from our models of linguistic diversity as *independent* variables; we also need to entertain the possibility that they are sometimes best treated as *dependent* variables. To ask why some pronouns, ergative markers, or inverse clauses are pragmatically or sociolinguistically conditioned while others are not is arguably more than a mere *jeu d'esprit*, but linguistic typology is – to my knowledge – not yet in a position to give a principled answer to such questions.

In addition to the strictly linguistic challenges this poses, it also leads to recognizing that not only field linguistics, language description, and language documentation need to take into account the relevant paralinguistic and extralinguistic dimensions alluded in the quote at the beginning of Subsection 4.1 in order to do a better job: typology also has to find realistic but illuminating ways not to explain explaining factors and explananda away. To quote from Epps's lucid article one last time:

[Why diversity is the way it is] demands the consideration of multiple variables: not only universal preferences, but also geographical and (genetic) genealogical distributions, diachronic change, and the interaction between language and social, cognitive, and cultural factors. (Epps 2011: 640)

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Notes

1. It is seldom mentioned in surveys that there were some forerunners whose endeavors pointed in the direction of modern typology, viz. Tommaso Campanella (1568-1639), Gabriel Girard (1677-1748), and Nicolas Beauzée (1717-1789). The proposal found in Adam Smith's *Dissertation on the Origin of Languages* (1761) can also be regarded as close in spirit (but arguably not in letter) to the Schlegel-Humboldt typology. See Bosson (2001) for details.
2. Some of Coseriu's work (1988a, 1988b, 1990) exemplifies and discusses this transition; see Aschenberg (2001) for details. See also Schmid (this volume) for an interesting discussion of the holistic/partial issue in the context of phonological typology.
3. I am indebted to an anonymous reviewer for helping me better present the relationship between the two concentric inquiries and its relevance.
4. First and second persons are different in that they invariably trigger DOM and inversion. Such asymmetries between speech act participants and third persons are well known from both descriptive and typological studies.
5. In most Chilean Mapuche communities I am acquainted with, it is elderly male speakers of some authority that are entitled to tell these somewhat conventionalized *epew* – at least in their longer versions –, typically in winter nights, around the hearth, and to familiar audiences. Unfamiliar non-Mapuche researchers wielding recording equipment may or may not be regarded as intrusive in other contexts, but they are not likely to receive permission to fully document such narratives unless they have successfully worked closely with particular individuals in specific communities over an extended period of time (usually, several years).
6. A recent example is Valenzuela (2011), which characterizes the use of the ergative enclitic in Shiwilu and Shawi (Kawapanan; Peru) as crucially linked to discourse factors. A similar phenomenon is found in Zaparoan, and related phenomena have been reported in Chibchan, Arawakan, Tibeto-Burman, and Australian languages (cf. Valenzuela 2011: 116 and her relevant references).
7. Roughly, speakers of Samoan use the ergative case much less frequently in the complex social event called *fono* than in everyday communication. See Duranti (1994: 85f, 125f) for details.
8. Such quantitative assessment of the degree of ergativity for typological purposes has been proposed in recent work conducted by (formerly) Leipzig-based typologists (cf. e.g. Witzlack-Makarevich et al. 2010 and Bickel et al. 2010).
9. The question of verbal *voseo* is analogous but somewhat more complicated. *Voseo* forms are prominent and robust in River Plate Spanish in the indicative and imperative but rather stigmatized and arguably more marginal in the subjunctive. In Chilean verbal *voseo*, by contrast, there are no imperative forms, the indicative and the subjunctive are equally robust, and there is no asymmetric stigma to them. How should the analyst compare such verbal paradigms in

terms of structure, and how much of actual use should be taken into account at what stage of the analysis? Rather than suggesting that such questions do not have (satisfactory) answers, my point here is simply that both descriptivists and typologists must try to give good answers to them.

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Multiple languages and multiple methods: Qualitative and quantitative ways of tapping into the multilingual repertoire

Raphael Berthele

1. Introduction

In this contribution, I will discuss different methods that can be used to empirically investigate the dynamics that are at work in multilingual language usage. More specifically, using examples from research on comprehension in foreign or unknown languages, I will consider the possibility of combining different methodological approaches. Methodological discussions tend to be rather uninteresting when they are tantamount to stereotypical attacks at straw men on the far and near side of the qualitative-quantitative divide (Bergman 2008b). The recurring invocations to overcome this divide by applying multi-methods approaches and so-called ‘triangulation’ are certainly well-intentioned but often problematic due to insufficient conceptual clarity about what type of evidence lends itself to triangulation and what its epistemological status in each particular case could be (see below, Section 2.3).

The very general remarks on methodological choices in this and the following section can by no means replace the extensive literature on (applied) linguistics methods (Seliger and Shohamy 1990; Nunan 2008) and methods in social sciences in general (Atteslander, Bender, Grabow, and Zipp 1991; Bortz and Döring 2003). The goal of the following paragraphs is to contextualize and to motivate the methodological considerations that underlie the studies that will be reported in the main part of this contribution.

This contribution is organized as follows: Section 2 provides some general considerations on methodological choices and the combination of methods in general. One of the most important points of Section 2 is that methods vary in their potential to limit the type data that can be gathered (control dimension) and in their degree of intervention or invasiveness into the language users’ universes. These and other fundamental methodological notions are then illustrated in Section 3 by means of two case studies. The case studies show how different elicitation methods and data types yield different types of results that, in some cases, can be combined in the sense

of mixed-method approaches. The first case study taps into the role of grammatical structures in comprehension of German as a foreign language, and the second study investigates the capacity of multilinguals to infer the meaning of cognate words in foreign languages. In the final section, concluding remarks sum up the main points of the paper by shedding light on critical aspects of both selective and non-selective approaches to language usage realities in multilingualism research.

2. Methodological choices as problem-solving procedures

2.1. Minimal prerequisites for scientific endeavors

In the remainder of this chapter, the term research refers to linguistic endeavors that involve at least three elements: A problem, data, and interpretation. Data without a research question (=problem) do not represent research, and neither do purely theoretical constructs without data (in the broadest sense of the word). In standard falsificationist approaches, the problem precedes the data, but some researchers also allow for the reverse logic, e.g. within the grounded theory approach (Glaser and Strauss 1967), where theories are supposed to emerge from the data. For the sake of maximal inclusiveness these approaches also fall under my definition of research, although I am personally very skeptical that it is ever possible to collect and analyze data without any (implicit) theories or assumptions as points of departure.

The data can be a corpus of text, experimentally collected responses, results of observation or of introspection, as has been the practice in early generativist linguistics. The term *problem* is intentionally used here and should not be confounded with the term *hypothesis*. Whereas the latter entails a particular type of research (hypothesis testing), the former is more general and deliberately involves all kinds of subject-matter related interests and goals a researcher can have. Science, in this view, is a continuous and principled attempt to solve problems (cf. Popper 2004).

A scientific problem is embedded into a theory in the broader sense of the word, i.e. a more or less consistent model involving assumptions about concepts and causal relationships between them. The goal of science is twofold: problem-solving and theory development. In the epistemological perspective taken in the present contribution, theories cannot be proven directly by research; they rather develop in a process of rejection, refine-

ment, and revision on the basis of evidence collected by researchers. I expect any research plan – be it a radically qualitative or a radically quantitative and falsificationist one – to bear the potential of yielding results that force the assumptions underlying the research plan to be revised. Causal theories (e.g. “individual multilingualism fosters creativity”), for instance, require experimental methods that bear the potential of failing to support the theory. Ethnographic or other qualitative data cannot be used to ‘prove’ or falsify such hypotheses, due to the lack of control of relevant factors and the high risk of confirmation bias in the selection of informants, settings and data items. On the other hand, if researchers aim at understanding or describing creative interaction among multilinguals in institutional settings, qualitative methods are a possible and sensible approach. They bear the potential of providing new evidence that ultimately leads to new and better theories of the nature of multilingual creativity.

2.2. Control over data and degree of intervention

Any research plan can be specified along at least two dimensions: intervention and selection (cf. van Lier 1988). Firstly, researchers have to decide whether they are looking for very specific kinds of data (a particular discourse marker, plural morphology, conditionals, etc.) or not. Depending on this choice, methods that provide sufficient amounts of data in the required quality will be chosen: searches across corpora, questionnaires, translation data for controlled studies, unfocused corpus data, ethnographic and interview data for less controlled research plans. The selection dimension is a gradual one, i.e. one can easily imagine data collection procedures that aim for a certain amount of control without going to extreme lengths in order to elicit, say, a high density of conditional verb forms by using a very focused elicitation procedure.

The second dimension is represented by the degree of intervention: On the high degree of intervention end of the scale there is a fieldworker who administers often rather unusual tasks in laboratory conditions, i.e. in conditions that are markedly different from ‘normal’ contexts of language usage. On the other end, there is little to no intervention from the researcher, either by working on data sets that have been collected for purposes totally outside the specific research project (e.g. corpora of newspaper articles), or by collecting observational data in ethnographic projects. Again, there are degrees of intervention, the psycholinguistic experiment being an extreme endpoint on a scale.

The combination of the two dimensions allows categorizing research designs according to four spaces (Nunan 2008: 8), as Figure 1 shows.

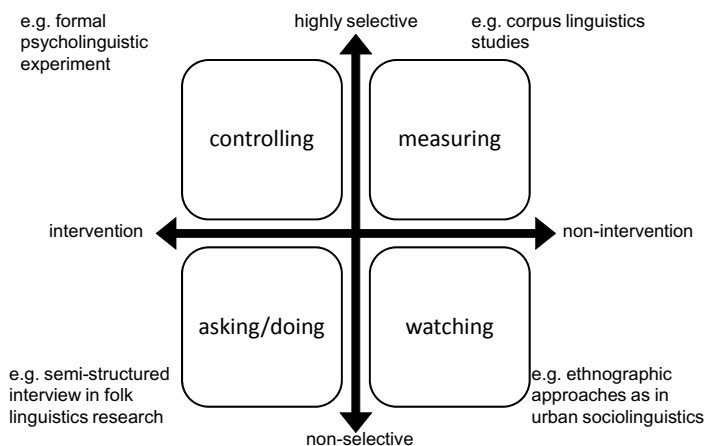


Figure 1. Two dimensions and four spaces (based on Nunan 2008: 8)

Sometimes, research from the watching space in Figure 1 is associated with a ‘constructivist’ vision of reality whereas research from the controlling space is deemed (or condemned) to be of the ‘positivist’ type. This association of visions of reality and research methods is too simple: It is perfectly possible to carry out ethnographically inspired research while having a rather positivist stance. Quantitative research, on the other hand, does not necessarily presuppose a realist or objectivist point of view (as opposed to nominalism or constructivism): There is no fundamental incompatibility between a constructivist take on reality and quantifications. Just as in qualitative research, the researcher can presuppose the categories or entities that he/she operationalizes to be socially and cognitively constructed. One of the fundamental categories used in linguistics, that of a *language*, is a good case in point for the construct character of the object of inquiry, since it is notoriously unclear where the boundaries of a particular language and/or dialect should be drawn.

Although most research predominantly uses one type of methodology, in many cases methods are combined. As in the research project discussed below, there are reasons to change perspectives and to use methods and data pertaining to two or even more spaces in order to find answers to the

respective problems. Such combinations are often referred to as ‘triangulations’.

2.3. Triangulation

In trigonometry triangulation allows determining the location of a target point by measuring angles to it using a baseline defined by two points. There is a certain tradition of mapping triangulation metaphorically onto the domain of methodology in the social sciences (Bryman 1992; Denzin 2005; Bergman 2008a; Hammersley 2008). Interestingly, taking the notion of triangulation literally implies that the determination of the target point is not possible without a basis of at least two different known points of view. A direct mapping of the trigonometry meaning onto the scientific target domain would imply that no scientific result can be obtained based on one point of view, which would certainly be an unusual and radical claim. Moreover, many usages of triangulation involve combination of data that are totally different in nature (e.g. experimental and ethnographic data). This is fundamentally different from trigonometry, where the two starting points are necessarily of the same kind.

Triangulation in social research, following Hammersley (2008), can have the four functions listed below. These functions are not all mutually exclusive (see also Blaikie 1991; Flick 2008 for critical discussions of the concept of triangulation):

- 1) validity checking: by using other data sources (e.g. by combining different quantitative measures, or by combining qualitative and quantitative methods)
- 2) indefinite triangulation: make visible how accounts are shaped by different purposes/perspectives of social actors
- 3) seeking complementary information: (probably the most common usage); can lead to correction of the first interpretation and is thus not incompatible with the validity checking function
- 4) epistemological enrichment: transgress the limitations of particular methods by combining several approaches; encourage dialogue between paradigms

The examples of triangulation given below will primarily serve the third function: The goal is to seek complementary information since the first

research paradigm chosen has given rise to new questions and problems that could not be resolved based on, e.g., quantitative data only.

2.4. Focus on experimental and other psychometric methods

Historically, research on bi- and multilingualism starts with the comparison of linguistic systems which, in a second step, allows predictions about domains of potential interferences in bi- or multilingual individuals (Weinreich 1953; Lado 1957; Ringbom 1990). A prerequisite of this approach is knowledge of the ‘systems’ that enter in contact and the empirical basis often is corpus data from bilinguals, collected in more or less natural environments or in language learning contexts (cf. Lado’s contrastive analysis hypothesis). Generally, this research ranks low on the intervention parameter but high on the parameter of selection, i.e. since looking at all aspects of linguistic structure at the same time is hardly possible, researchers focus on particular partitions of linguistic structure. Only in more recent times have experimental data entered the field of multilingualism research (Gullberg, Indefrey and Muysken 2009). The term experiment can be used in a narrow and in a wider sense:

A) Experiment in the narrower sense (‘true experiment’):

Control for all relevant variables (ideally), laboratory conditions, pre- and posttests, experimental and control groups, random assignment of participants

B) Experiment in the broader sense:

Control for a maximum of relevant variables, field conditions, pre- and posttesting and experimental/control groups can be replaced by post-hoc grouping of participants according to selected independent variables, no random assignment of participants

There are different terms in the methodological literature for research that can be attributed to the second category above. All of these types of research are located somewhere in the controlling space in Figure 1, with slightly varying degrees of selection and intervention. Field experiments rank somewhat lower on the intervention scale than true experiments since they do not require laboratory conditions which by nature are highly invasive. The field and quasi-experiments with multilingual subjects discussed in Section 3 do without randomization of subjects and thus cut back on the intervention dimension as well, but they can still target quite selective data

types, e.g. cognate recognition as investigated in Berthele and Lambelot (2009), or transfer of syntactic schemata from one language into the other as investigated by Peyer, Kaiser, and Berthele (2010). In other cases, less selective data types can be elicited, e.g. when measuring global text comprehension.

As in many other disciplines, researchers in multilingualism studies are interested in causal relationships between variables. Does bilingualism help in learning a third or additional language? To which extent do structures of a multilingual's first language causally determine the dynamics of second or third language learning? Does bilingualism foster intelligence? The method that best licenses claims about causality is a true experiment (Waldmann 2002). Unfortunately, true experiments are often impossible to carry out. Controlling for bilingualism and all other relevant factors in an experimental paradigm would require a representative sample with random assignment of participants to the experimental (bilingual) and control (monolingual) group and then training the bilingual group in a second language, which even according to the most liberal definitions of bilingualism would take several years. Such designs are unrealistic, which is why researchers are forced to draw on other methods, trying to control as many factors as possible, but easing methodological restrictions such as random-assignment or experimental treatment and pre- and post-testing. Quasi-experimental and ex-post-facto research thus is often the best multilingualism researchers can do, if they go for the controlling space at all. The price to pay is that causal relationships between variables can hardly ever be tested.

3. Empirical investigations on the multilingual repertoire at work

In this section, evidence from two research programmes on receptive proficiency in multilinguals will be presented and discussed. Since the emphasis for the present purpose lies on the methodological choices, the description of the samples and procedures is not comprehensive but rather selective.

3.1. Example 1: Investigating the role of grammar in comprehension of German as a foreign language

The main goal of the first project to be discussed here is the investigation of the role of grammar in understanding German as a foreign language (see

Peyer, Kaiser, and Berthele 2010; Kaiser and Peyer 2011 for details). Although there is a considerable number of contrastive grammatical analyses of German and some other Western European languages, there has been only very little empirical work on their actual measurable influence on exolingual comprehension. The way we wanted to empirically investigate the role of contrastive features of German grammar was to proceed in a multi-methods approach combining non-selective observation data with testing data of a more selective type, with each stage in the research plan pursuing particular epistemological goals (see Table 1 for an overview).

Table 1. 3 phases. The selection and intervention scales are roughly divided in a high, middle and low segment (+, ±, -).

<i>Phase</i>	(1) Qualitative pilot phase	(2) Quantitative main phase	(3) Qualitative feedback phase
<i>Main goal</i>	Identify potential problem zones (grammar)	Test empirical difficulty of previously identified constructions	Observe how learners try to understand items that yielded surprising quantitative results
<i>Method</i>	Elicitation of verbal protocols of translation of authentic German texts into L1	Assessing and testing: Proficiency tests, comprehension task with discrete point test items	Verbal protocols of group task similar to (1), translation of selected passages from the reading texts in (2) into L1
<i>Data type</i>	-selective; ±intervention	+selective; +intervention	±selective; ±intervention
<i>Sampling</i>	Students of German at Italian and French universities, L1 French, Italian.	Mostly students of German at Italian and French universities, L1 French, Italian.	Students of German at Italian and French universities, L1 French, Italian.
<i>Analysis</i>	Mainly bottom-up search in the data for grammatical problems	Hypothesis testing of empirical difficulty of target structures vs. alternative structures	Look for new explanations of surprising patterns emerging from the quantitative data

To illustrate the type of evidence collected in each phase of research, I will briefly discuss three examples, all of which concern the same grammatical characteristic of German grammar, viz. the possibility to have OVS syntax.

The first example is a token from phase (1), produced by a Francophone law school student, who is at an advanced intermediate level in German and enrolled in a bilingual MA programme at the bilingual University of Fri-

bourg. We selected newspaper articles on law issues from the *Neue Zürcher Zeitung*, and asked the students in a one-to-one setting to read these texts and to translate them into their native language. The goal was to observe where the multilinguals can provide smooth and adequate translations and where the informants hesitate, make mistakes or are completely lost. We always provided help with respect to vocabulary, either in the form of lists or in the form of online oral translation of particular items the informants were struggling with.

(1) Target item from a newspaper article:

Dem Bundesgericht erscheint die Einschränkung
the-DAT federal_court appears the limitation
 der Urlaubsgestaltung keineswegs als verfassungswidrig.
the-GEN vacation arrangement in no way as counter the constitution
 ‘The federal court regards the limitation of the vacation arrangement in no way as counter the constitution.’

Participant: Noëlie, Law Student at University of Fribourg, L1 French

[1]	0 [00:00.0]	1 [00:03.7]	2 [00:05.1]	
Noëlie [v]	le tribunal federal d'aucune manière afin il a aucune possibilité			
Fieldworker [v]	oui			
Noëlie [EN]	the federal court in no way	well	it has no possibility	
Fieldworker [EN]	yes			
[2]	3 [00:06.3]	4 [00:06.7]	5 [00:14.7]	
Noëlie [v]	keineswegs eeuh deee ... d'aller contre ... la constitution			
Fieldworker [v]	oui le Bundesgericht donc			
Noëlie [EN]	in no way	mmmhhh ...of going against	the constitution	
Fieldworker [EN]	yes	the federal court hence		
[3]	6 [00:18.5]	7 [00:21.0]	8 [00:20.6] 9 [00:21.1]	10 [00:23.6]
Noëlie [v]	ahh dem Bundesgericht	ça j'avais pas remarqué		
Fieldworker [v]	le tribunal fédéral c'est quoi au niveau de la phrase eb ben voilà			
Noëlie [EN]	the:DAT federal court			
Fieldworker [EN]	the federal court	what's that in the clause	here we go	
[4]	11 [00:23.6]	12 [00:24.0]	13 [00:42.6]	
Noëlie [v]	eeuhh ... ce dit la contrainte apparaît au tribunal fédéral			
Noëlie [EN]	mmmhh...it says the limitation appears to the federal court			

A possible explanation of the problem in [1] and [2] above is that Noëlie's first assumption is that the first NP constituent in the target item functions as the clause's subject, which is not the case in this particular example. This

assumption could be based on the strong cue to subjecthood represented by an NP in clause initial position in French, whereas this cue in German is less reliable. It could further be hypothesized that it is only after the intervention of the fieldworker that the participant notices the dative morphology (<Dem>) in the definite article and revises the argument structure in her interpretation of the clause. It could be that the informant applies some sort of a 'natural' default parsing strategy where the agent and thus usually the subject is expected to be in first position. Or, from a multilingualism point of view, it makes sense to assume that the subject's L1 with its deeply entrenched syntactic SVO schema interferes with the parsing of the German clause. However, we need to keep in mind that the method chosen for this pilot study does not control for important factors: We don't know for sure that the sentence would have been translated more easily if the topological order of the L1 had been respected (SVO), since other factors, such as the general amount of semantic complexity of the clause could interfere. And we don't know whether the token is an accidental drop in receptive performance of this particular informant or whether she has problems in general with OVS structures, or with dative morphology. Moreover, we don't know whether this hypothetical transfer of L1 syntax is only a phenomenon we encounter on low or intermediate levels of German proficiency. To sum up, although the SVO-transfer theory is intuitively plausible and seems consistent with the qualitative data gathered in the first step of the project, there are problems of reliability and validity that do not allow hasty generalizations. This is why we need quantitative methods as well.

Although the method used in this phase is clearly qualitative, some quantifications were done based on the verbal protocols: If several informants on several occasions showed problems of the type illustrated by Example (1) above, we decided that the structural properties shared by the different items were good candidates for a structure to be tested on a larger scale in phase (2). In this regard it is important to note, however, that the type of qualitative evidence, although it is in some sense richer than quantitative operationalizations, does not 'represent' or 'mirror' reality, but is just as well based on interpretative operations.

The next phase in our research project was to select a number of promising structures from phase (1) and to construct a new instrument that allows for controlled quantitative data elicitation in the sense of the upper left space in Figure 1. As described in Peyer, Kaiser, and Berthele (2010), the goal here was to control for certain factors influencing reading in German as a foreign language and to shed light on the role grammatical aspects play

in comprehension. The most controlled fashion of doing this would have been an experimental setting involving e.g. target sentences containing particular structures (experimental condition) or not (control condition) presented on a screen while measuring reading and other response times as well as the comprehension of the sentence. This kind of setup allows for relatively high degrees of construct and internal validity, and, depending on the sample, also of external validity. However, and this is the great disadvantage of highly controlled studies, the ecological validity, i.e. the degree to which reading and comprehending isolated target items in a foreign language stand for the process of reading in more or less natural situations, is supposedly low.

Here, methods that involve observation (of reading processes, e.g. via verbal protocols) and maybe asking (about strategy usage) have much more to offer. The disadvantage of such methods, on the other hand, is that they do not provide the highly selective type of data we were aiming for. The relatively specific question of the role particular features of grammar play in comprehension of German as a foreign language could probably not be answered based on data collected in a non-selective paradigm. The solution was a compromise: We constructed pseudo-authentic texts in the style of encyclopedia articles about imaginary animals, which allowed us to control for knowledge about the world while keeping the text type and the reading situation relatively natural. By giving written (interlinear) translations of content words in the texts we aimed at controlling for lexical knowledge, thus trying to isolate the grammatical component of potential comprehension problems. This methodological choice, however, deliberately dissociates two things that are never actually separated in 'real life', at least not if the theoretical presuppositions involve a monotonous construal of a grammar-lexis continuum. Arguably, a generativist stance might be more sympathetic to the division between the two 'modules'.

We worked with parallel versions of texts, which were propositionally identical but contained different grammatical structures. The structures that varied systematically were those deemed to be relevant based on the first phases of the research project (Table 1). For each sentence or clause containing the target structure (e.g. OVS) there was an alternative grammatical structure which expressed the same proposition in the parallel version of the text (e.g. SVO; cf. Example 2).

(2) Example of target and alternative structure

OVS

Einen Boren fressen Flundodile gerne.

A:ACC boren eat flundodiles willingly

SVO

Flundodile fressen gerne einen Boren.

Flundodiles eat willingly a:ACC Boren.

The participants in the experiment, a total of 506 Francophone or Italian-speaking university students with varying levels of proficiency in German, had to respond to discrete-point test items tapping into the exact comprehension of the target items. In the case of Example (2) the comprehension test was simply an item asking to list the food the Humpfhorn eats.

The OVS structure was operationalized by items such as Example (2) above. On the whole, this structural characteristic of German turned out to be empirically difficult as compared to equivalent structures of the SVO type (see Figure 2). The difference in empirical difficulty between the two structures is statistically significant overall as well as for all levels from B1 on upwards (Kaiser and Peyer 2011: 194). The impression we had gained from the analysis of the qualitative data thus led to a hypothesis that survived inferential statistical testing in the controlling space of Figure 1.

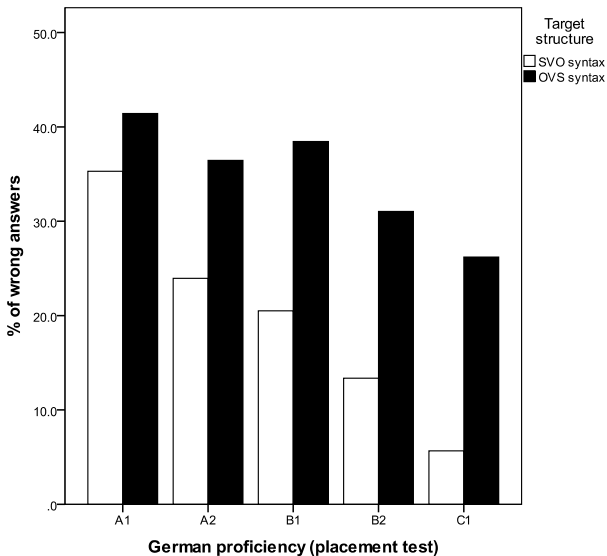


Figure 2. Empirical difficulty of items containing OVS vs. SVO structures

As far as the question of external validity is concerned, we deem the result to be generalizable to reading situations involving rather detailed, informa-

tionally dense, technical texts read by native speakers of either Italian or French with high literacy skills.

Whereas the global results for the OVS structure suggest an increased difficulty of items following this noncanonical (from the point of view of a native speaker of an SVO language) pattern, the analysis of individual target items in the stimulus texts sometimes revealed surprising results. As a last example, the item in (3) will be discussed.

(3) Example of target and alternative structure

OVS	SVO
Dem Humpfhorn dienen aber in seltenen Fällen auch Mörkele und Blusten als Nahrung.	Aber auch Mörkele und Blusten dienen dem Humpfhorn in seltenen Fällen als Nahrung.
The:DAT Humpfhorn serve however in rare cases also mörkele and blusten as food.	However, also mörkele and blusten serve the:DAT flundodile in rare cases as food.

This item produced a mean error rate of 33.3% (OVS) vs. 26.2% (SVO). This difference is statistically not significant. Based on this item only we were thus unable to confirm the hypothesis regarding OVS difficulty. Such results, which go against our expectations, emerged also for some of the other target structures. As is often the case, although some answers can be given on the basis of the hypothesis testing (falsificationist) paradigm, more new questions arise from the patterns found in the data. As shown in Table 1 above, the last stage in the research project was to return to more qualitative, observational data in order to generate new hypotheses about the particular items that are not ‘well behaved’ in the sense of the general contrastive approach that had fostered the initial hypotheses.

Example 4 is a transcript from this third phase. Adult learners of German as a foreign language were presented with our target texts again, and the task here was to work in dyads on the comprehension of these texts, while thinking aloud and translating orally into the participants’ L1.

(4) Verbal protocol of translation. Target item cf. (3) above.

[1]	0 [00:00.0]	1 [00:02.0]	2 [00:04.0]	3 [00:06.0]	4 [00:08.0]
A [v]	alors euh dans certains cas le humpfhorn euh se sert euhh				
B [v]	mais dans				
A [v]	well mmm in certain cases the humpfhornmmh uses mmhh				
B [v]	but in certain				
[2]	-	5 [00:10.0]	6 [00:12.0]	7 [00:14.0]	8 [00:16.0]
A [v]	dans de rares cas le hum le humblorn le humpfhorn (2.0)				
B [v]	certains cas sert				
A [v]	in rare cases the humblorn the humpfhorn				
B [v]	cases serves				
[3]	9 [00:18.0]	10 [00:22.0]	11 [00:24.0]		
A [v]	(4.0) Ah, 'Dem Humpfhorn dienen aber in seltenen Fällen auch' (2.0)				
A [v]	Ah, "But the:DAT Humpfhorn serve in rare cases also"				
[4]	12 [00:26.0]	13 [00:28.0]	14 [00:30.0]	15 [00:35.4]	
B [v]	C'est bizarre. Mais				
C [v]	Il sert de nourriture aux mörkele et aux blusten m'(5.0)				
B [v]	That's strange. But I				
C [v]	It serves as food to the mörkele and to the blusten				
[5]					
[5]	16 [00:38.0] 17 [00:40.0] 18 [00:53.0]				
B [v]	je comprends pas pourquoi y a du (-) du du datif(-) ah si c'est euhh mais				
B [v]	don't understand why there is a dative ah, if it's mmmh but in				
[6]	19 [00:56.1]	20 [00:57.7]	21 [01:02.9]		
B [v]	dans dans de rares cas les mörkele et les blusten servente de(.) nourriture au				
C [v]	(.)les mörkele nourriture (.) au				
B [v]	in rare cases the mörkele and the blusten serve as food to the				
C [v]	the mörkele food to the				
[7]	22 [01:05.4]	23 [01:07.1]			
B [v]	euhh humpfhorn				
C [v]	humpfhorn				
Fieldworker [v]	mhm (.) genau				
B [v]	humpfhorn				
C [v]	humpfhorn				
Fieldworker [v]	mhm exactly				

As can be seen from Example 4, at the very beginning of the translation attempt (Segment [1]) the informants generate a mental model of the text that is propositionally close to the meaning of the text. This is remarkable since they are far from parsing the sentence appropriately: The dative ob-

ject is hypothetically analysed as the subject and the verb (*dienen*, ‘to serve’) is translated by *se servir*, which would have an argument structure that is equivalent to *use*. There seems to be, at least at the very beginning of the comprehension process, a conspiracy of shallow parsing of the constituent structure with a near mistranslation of the lexical verb which leads to a propositionally correct translation (*Humpfhorn eats mörkele and blusten*). As soon as the dative morphology is discovered, things get complicated and temporarily messed up. It is not until in the second to last segment [6], after rather long reflection and discussion of the sentence, that a mental model emerges that is not only propositionally correct, but that is also yielded by a correct analysis of both lexical content and argument structure. This analysis allows shedding light on the surprisingly high percentage of correct comprehension of this rather difficult item: If especially low proficiency learners of German only run a superficial analysis of the passage based on some conceptual content conveyed by lexical items and frame knowledge of eating (requiring an agentive eater and an eatee), the analysis can be propositionally correct despite considerable linguistic ignorance.

3.2. Example 2: Interlingual inferencing of cognate words

The last example to be briefly discussed here stems from a series of investigations into the way multilingual individuals infer the meaning of cognate words. Again, the focus lies on comprehension of a non-native language, but this time the target language is an unknown one, even though genealogically related to the multilingual subjects’ previously acquired languages. Moreover, the target items are not sentences or texts, but only (cognate) words. As in Section 3.1, I will show how evidence from different methodological spaces (cf. Figure 1) can be combined and integrated to enrich the global understanding of the underlying processes.

The stimuli are presented either with or without context, and the target items are words in languages that the participants have not learnt, but that are genealogically related to languages they master. The broader context of these studies is the interest in intercomprehension or semi-communication (Braunmüller and Zeevaert 2001; Hufeisen and Marx 2007), and more specifically, in ways of increasing the usage value of ‘smaller’, lesser used languages via the rapid development of receptive competences. As several studies on different target languages have shown, there is weak but statistically meaningful correlation between the number of languages a participant speaks and the general ability to infer the target items. In particular one

study (reported in Berthele 2011) provided evidence for positive correlation of this inferencing capability with the age factor (the older the better) as well as with modern language learning aptitude. For this present methodological discussion one particular aspect will be in the focus: What are the characteristics of cognate words that are generally well inferred by multilinguals, and what are the characteristics of words that turn out to be impossible to infer? Based on ideas from research on third language acquisition and transfer (Odlin 1989; Ringbom 1990), the hypothesis was that the best predictor for the empirical difficulty of items should be the linguistic distance between the target cognate and the transfer base in the multilingual lexicon of the inferring individual. As illustrated in Figure 3, cognate words can be very similar or quite different with respect to their targets, if measured using string similarity algorithms such as the Levenshtein distances (cf. Heeringa, Kleiweg, Gooskens, and Nerbonne 2006). At least from a psycholinguistic point of view it seems reasonable to construe the category of cognate as a radial category with fuzzy boundaries rather than a clear-cut category based on genealogical relations across languages.

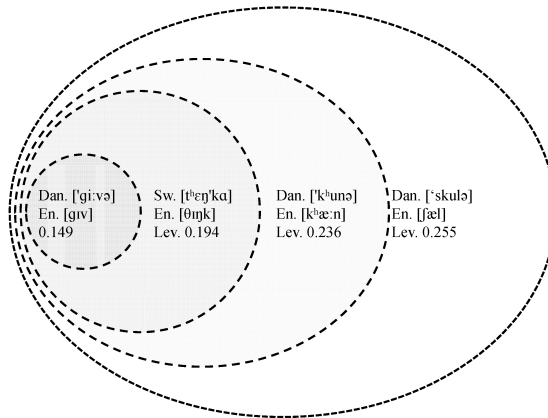


Figure 3. Danish and Swedish Cognates and feature-based Levenshtein distances to English

For the sake of brevity I will only give a short summary of the results of the experimental (in the wider sense) data on listening comprehension of cognates: The quantitative analysis of the empirical difficulty and the linguistic distance as measured by the phonologically weighted Levenshtein distances revealed that items that are beyond a particular threshold (cf. Figure 4,

threshold around 0.22) are hardly ever correctly identified by the participants, but that for items below this threshold the correlation is weak.

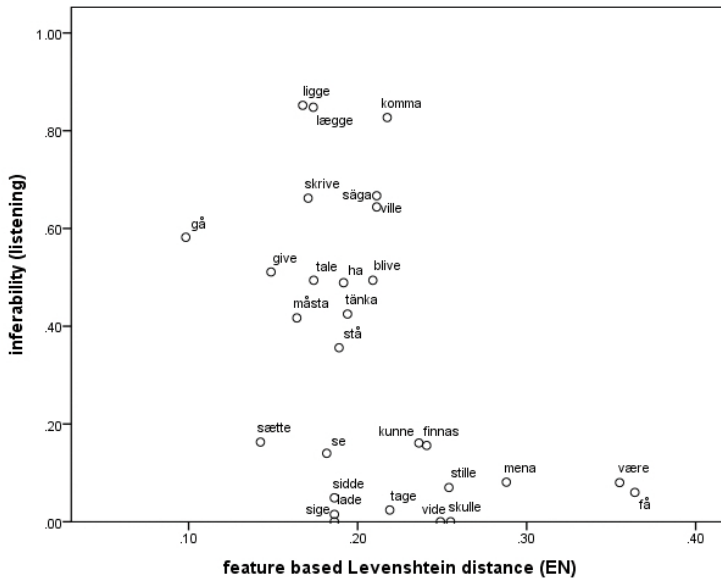


Figure 4. Empirical difficulty (inferability) of items and feature-based Levenshtein distances to English cognates

A subsequent quantitative analysis aimed at the detailed investigation of the impact of particular phonological contrasts between target words and potential transfer bases. The results suggest that as soon as consonants are different (with respect to place or manner of articulation), interlingual inferencing becomes very difficult. Phonological differences in vowels, on the other hand, do not seem to be a problem, in many cases a difference even coincides with better interlingual inferencing (cf. Berthele 2011 for a detailed discussion of these analyses). However, we cannot be entirely sure whether the patterns are internally valid, i.e. whether the items that could not be inferred with success by a majority of the informants remained opaque solely due to consonant differences (see also Beijering, Gooskens, and Heeringa 2008). One way of cross-validating this ‘consonant theory’ of cognate recognition was again a methodological change of spaces (cf. Figure 1): Moving from the controlling space of the quasi-experimental design to the asking-space of a thinking-aloud task with the same target items seemed to be a way of investigating the question whether multilinguals are

indeed relying more on consonants than on vowels in cognate recognition. Below, five examples of verbal protocols (simultaneous thinking about the cognates) are given, from two different participants.

Table 2. Verbal protocols from cognate translation tasks

target	verbal protocol (participant BB)
tänka (Swedish, ,to think‘)	denken, könnte auch tanken heißen (.) oder danken thank you think, could also mean to gas up, or to thank, thank you
lade (Danish, ,to let‘)	lade (.) aufladen, lade ([leid]), könnte auch hinlegen (-) ja lade, to load, lade, could also [mean] to lay, yes
skulle (Danish, ,should‘)	skulle, ja skulle (.) scroll (-) vielleicht herunter- (.) to scroll (.) rollen, so in dem Sinn skulle, yes skulle, scroll, maybe down-, to scroll down, in this sense
mena (Swedish, ,to mean‘)	mena – ähmm (--) mène (.) amener [French pronunciations] vielleicht bringen kommen so etwas, mmh (---) oder vielleicht auch halten (.) ja mena, mène, amener, maybe to bring, to come, something like this, or maybe also to hold, yes
skulle (Danish, ,should‘)	verbal protocol (participant SG) SG: skulle - oh das ist aber ein herziges Wort ii - tönt ein bisschen nach Totenkopf oder so (17.0) skulle (-) das ist sicher ein Profilwort, das man gar nicht ableiten kann (12.0) keine Ahnung, kann ich auch sagen ich hätte keine Ahnung? skulle (---) skifahren – nein (-) skulle Fieldworker: was denkst du, was das wohl... SG: rollen, aber nur weil es zwei -ll- hat aber weiss es auch nicht (---) aber das ist absolut skill, ah vielleicht fähig sein oder so oder wissen skulle (--) ja sagen wir wissen (.) von irgendwie skill, Fähigkeit EN: SG: skulle – this is a nice word sounds like skull or something this surely is a profile word that cannot be derived no idea, can I also say that I’ve got no idea?

skulle to ski - no

skulle

Fieldworker: what do you think, what this...

SG: to roll, but only because there are two -ll- but I don't know

but this is totally

skill, ah, maybe to be able to, or so, or to know

skulle

yes, let's say to know from like skill or something

With respect to the 'consonant theory of cognate recognition' that emerged from the quantitative analyses, the examples above (and there are many more in the data) seem to show that, indeed, the two participants search lexical entries in their multilingual repertoires for matching consonant skeletons. The item *skulle* (that has not been inferred correctly by anybody in the sample) is particularly revealing, since the participants associate all kinds of English and other words that share either the /sk-/l:/ pattern (in one case with the addition of an /r/: *scroll*) or at least a /l:/ in second consonant position. Whereas there is no way of tracing the searches the participants carried out in the quantitative analyses of the paper-and-pencil variant of the task, the thinking-aloud task allows to tap into these interlingual processes. On the other hand, since the thinking aloud data are relatively non-selective in nature, quantifications are difficult and inferential statistics are impossible and/or make little sense. The triangulation (in sense 3 of the list in Section 2.3) of the quasi-experimental data from the controlling space and the verbal protocol data from the asking space seems to produce converging evidence in support of the consonant theory of cognate recognition, since many of the verbal protocols show how informants vary systematically the vowels while keeping the consonants fixed.

Since most of the data discussed here stem from rather highly educated participants (mostly university students), the external validity of the results remains limited to populations with similar educational backgrounds.

4. Conclusions

Research on multilingualism obviously obeys the same methodological constraints governing most other empirical disciplines. Science-internally it is most important that researchers be aware of the underlying epistemological stances of these activities. In my view it is too simple to associate quali-

tative methods with constructivism and quantitative methods with objectivism, as Nunan (2008: 4) seems to suggest: Bad ethnography is not subjective, but intransparent and perpetuates preconceived wisdom, bad psychometrics ‘proves’ by showing off statistical pomp ill operationalized constructs and unwarranted claims on causal relations between them. As a believing and practicing constructivist I would like to argue that both research belonging to the controlling space and to the watching space (e.g. psychometry vs. ethnography) construct their field/reality based on apriori questions/categories. Triangulations in the third sense thus are a delicate affair, since different elicitation methods lead to different construals of reality. For the examples from my group’s research discussed above, one can thus object that the verbal protocols represent a type of data that is not directly comparable to the quantitatively gathered responses to the target items. I have tried to attenuate this problem by keeping the target items (grammatical target structures, cognate words) and the goal of the tasks identical (comprehension) by only varying the nature of the response data and the constraints on the context of the task. But I would not deny that there is what I suggest to call a “constructivist threat” to triangulation approaches that needs to be taken seriously. More generally, it seems that hasty attributions of realism and nominalism to quantitative and qualitative approaches respectively are as inappropriate as the celebration of triangulation and multi-methods approaches as universal cure. Triangulation is not per se better than a single-method approach, and moreover it is important to distinguish the fundamentally different types of triangulation listed in Section 2.3.

By no means have I wanted to overrate the two examples of my own research presented in this contribution as particularly outstanding tokens of methodological excellence. There are obvious shortcomings of the methodological choices, e.g. the second stage of the first project presented (Table 1) is only half-heartedly located in the controlling space, which was the price we paid for a minimum of ecological validity of the reading task. More rigorous control (i.e. even more selective data and more intervention) would be an important complement to our study. Other shortcomings of all the analyses presented here can easily be identified. The studies were thus merely intended as illustrations of two points: Firstly to show the particular constraints imposed by each methodological choice, and secondly to illustrate possibilities of moving across the different methodological spaces in Figure 1.

In addition to the scientifically relevant questions of the relation between methods and potential realities that are more or less independent of the beholder, multilingualism researchers need to pay particular attention to questions of validity: In modern Western societies issues that are at the core of our field are also in the focus of educational and migrational policies. We therefore need to be particularly aware of the degree of generalizability of the insights we gain from our data. Researchers, particularly if they are carrying out mission oriented research payed for by actors from the education policy domain, need to state clearly the threats to internal and construct validity that any operationalization bears, and they need to be very clear about the limits of generalizations inherent to their research paradigms: Qualitative analyses, despite their potential to provide “thick descriptions” of language usages and their contextual embeddings, must not be used as bases for generalizations unless there is substantial converging evidence from other studies applying other methods. Quantitative studies that do not involve adequate sampling techniques and control for the most important factors influencing linguistic competence (and there are many such potential factors) only license very limited external generalizations. Biased sampling practices in psychology or psycholinguistics (e.g. doing experimental research based exclusively on psychology students taking ECTS points for their participation) pose serious threats to the external validity of the research results.

Although these caveats are far from being new, we can frequently observe that language policy is based on insufficient scientific evidence or on abusive misinterpretation of scientific results. The misguided usages of the PISA survey data in educational policy debates are only one very prominent example: A cross-sectional monitoring study that compares the efficiency of educational systems has been used as ‘scientific proof’ of all kinds of causal models that, from an epistemological point of view, could only be investigated via longitudinal or experimental designs.

Methodological questions therefore are crucial especially for research in applied linguistics: Contrary to the somewhat less noble connotation of applied (as opposed to fundamental) research, it is precisely the applied linguists who need to be particularly aware of the epistemological constraints governing scientific activities and of the high methodological standards that are needed when social, educational and political issues are at stake. This is not to say that it is easy to be a structural linguist analyzing Icelandic passives, but it is at least as complicated and challenging to make scientifically valid statements about multiple first language acquisition in

Swiss German kindergartens, let alone about which language policies in linguistically diverse contexts lead to more educational success for members of (multilingual or other) risk groups. Here, it seems, language experts would be well advised to overtly specify the limits of generalizability imposed by the nature of any scientific endeavor. Along this line of thought, the most important part of proper methodological groundwork is the insight of the inevitable constriction of the area of application of any empirical evidence and of the genuinely unstable nature of scientific knowledge in general.

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Koineization and cake baking: Reflections on methods in dialect contact research

David Britain

1. Introduction

The dialect contact paradigm of research in – mostly variationist – sociolinguistics examines the linguistic outcomes of the clash of distinct varieties of the same language.¹ This paradigm gained momentum after the publication of Trudgill's (1986) book *Dialects in Contact*, which surveyed the rather dispersed literature on the topic up to that date, presented new case studies of contact, and, most importantly, synthesized a set of outcomes common to all or most forms of contact of this kind. He argued that in dialect contact situations, interaction between speakers of different dialects causes routine linguistic accommodation and convergence, which, if sustained over a longer period, could lead to permanent subtle changes in a speaker's linguistic behaviour. Children born into such communities acquire these converging linguistic systems and, if social circumstances are right, continue to converge them, eventually leading to the community-wide emergence of a focussed new dialect in place of the original *mêlée*. Given the untenability of the language-dialect distinction, there is, of course, a rather fuzzy boundary between dialect contact and language contact research. The study of each has largely progressed independently, however, using different terminologies and methodologies. Here I focus solely on the contact of distinct, but nevertheless typologically very similar varieties.

This contact between varieties has been examined in a number of different contexts and I will reflect on a number of these here. On the one hand, dialect contact research examines the consequences of very short term contact, such as of the kind that we engage in in service encounters in shops or other brief, fleeting encounters. On the other, it examines the consequences of the long-term contact that results from long-distance mass migrations of speakers of different dialects of the same language. It examines the contact between a travel agent and her customer buying a holiday in Majorca (Coupland 1984) – *linguistic accommodation* – as well as the contact between the hundreds of thousands of British and Irish settlers of New Zealand in the 19th century who formed the first Anglophone speech commu-

nity there (Trudgill 2004; Gordon et al. 2004) – *new dialect formation* via the process of *koineization*. And there are a range of forms of contact that fall between these two in scope and intensity, in the literature most notably: the migration of individuals and their families to new places where there is an established but distinct target variety (the end result of which is known in the literature as *second dialect acquisition*), as well as the contact that results from everyday mundane mobilities in one's neighbourhood or region (resulting in *supralocalization* or *innovation diffusion*). The breadth of these contexts has led some to argue that perhaps all or at least most language change should be conceptualized as resulting from (dialect) contact (e.g. Milroy 2002).

The aim of this paper is, very unusually in dialect contact studies, to reflect upon how research in this sub-discipline is carried out, the methods used to examine the consequences of this contact. Since most researchers in the field come to this topic from sociolinguistic or variationist dialectology, there is an overwhelming tendency to try to apply the methods of traditional Labovian sociolinguistics (e.g. Labov 1966; 1972) to the task. Here I examine some of the particular data collection issues that arise from work in linguistic accommodation, second dialect acquisition, innovation diffusion, new dialect formation and supralocalization. The examination will necessarily be brief, but will attempt to raise some of the problematic issues that researchers have had to face. In some forms of dialect contact research, especially those which focus on koineisation, cooking metaphors are often applied, because an original mix (of dialects) eventually ends up as a more homogenized final product (a koine). In assessing the methods used in dialect contact research, then, this paper also considers the extent to which a cake-baking metaphor can suitably be applied to work in this field.

2. Methods in dialect contact research

2.1. Structural linguistic accommodation

In general, the brief, fleeting nature of the speech events that give rise to short-term face-to-face accommodation have not posed significant data collection difficulties for dialect contact researchers. The routine practice of convergent linguistic accommodation in such short-term contexts is crucial to dialect contact theory, since the latter argues that the changes that take place as a result of dialect contact are the result of the fossilization of linguistically convergent forms (Trudgill 1986). Despite this, such studies are

actually fairly few in number. Service encounters provide a valuable possible source of relevant data, and one of the earliest studies of face-to-face short-term accommodation was carried out in a travel agency (Coupland 1984; see also De Stefani, this volume). Here, a female travel agent was recorded during transactions with customers of different social classes. The study showed that not only did the travel agent change the proportions of her use of different linguistic variables to converge with those of her customers, but also that she did so partially, and incompletely. She converged towards her customers, she did not copy them. Other accommodation type studies of this kind are almost experimental. Bell and Johnson (1997) set up an experiment in New Zealand where four interviewers – two Maori, two European New Zealanders, one male and one female of each ethnicity, each interviewed the same four people, again distinguished by ethnicity and gender. In doing so, they were able to examine how differently the same person spoke when the audience differed. Again, results showed that speakers variably accommodated, depending on the audience, showing that the speaker-addressee combination together determined the linguistic outcome. Later research by theorists of stylistic variation and accommodation were able to refine and problematize a lot of these early findings (Coupland 2007), but the very fact that incomplete accommodation took place in such settings was all that dialect contact approaches really needed from this kind of data. It is central to established approaches to dialect contact that convergence and accommodation are routinely inaccurate and partial, since thereby it can explain how, as a result of longer-term contact, interdialectal forms sometimes fossilize which are clearly the product of the convergence of two forms in the original dialect ‘mix’. In studies of short-term accommodation, it is naturally obvious what the ‘ingredients’ of this ‘mix’ were – for example, the travel agent and her customer. More tricky, as we will see, is establishing what the ingredients were when we are examining mass migrations that caused dialect contact on a large scale. In these studies of short-term accommodation, however, the recipe was clear.

2.2. Second dialect acquisition

Short-term acquisition studies were able to show that speakers converged, fleetingly, to their interlocutors. But what would happen if this accommodation were to take place routinely and persistently and over a long period of time? Dialect contact theory relies on the fossilization of accommodation to explain the outcomes of more dramatic but long term contact. Researchers then began to study prototypical examples of such long-term accommo-

dition – the consequences for the dialects of individuals who moved from their home dialect area to a new one. Did they lose their original dialect? Did they pick up the new one? Perhaps the most famous study in this field is Chambers' (1992) analysis of six Canadian children of different ages who moved to Oxfordshire in Southern England. Focussing solely on the linguistic factors that influenced second dialect acquisition (SDA), Chambers developed a set of principles which were supported by his own findings and the other few sporadic pieces of work that could be classed as SDA. Perhaps the most important were that: (i) age was a critical factor – the younger the children, the more likely they are to pick up the second dialect; (ii) lexical features were adopted before phonological ones; and (iii) that 'simple' features were adopted more readily than 'complex' ones.² A number of other studies have also tried to test and replicate Chambers' work – e.g. Tagliamonte and Molfenter (2007) on three Canadian children in Northern England; Al-Dashti (1998) examining Egyptian migrants to Kuwait, Foreman (2003) on Canadians and Americans moving to Australia and Werlen et al.'s (2002) analysis of migrants from Oberwallis to Bern in Switzerland. A methodological dilemma arises here, though. Whilst experimental methods work well for short-term accommodation, for long-term contexts it is more difficult. Ideally, for a first wave study of SDA, one would have a large and socially and generationally stratified sample of speakers, all from the same place, all moving to the same place at the same time with the same degree of exposure to the new target dialect. We would record these people before they leave their home dialect area and then again at some time, or better at regular times, thereafter. But of course real life does not work like that, and it is not the sort of scenario that one could ethically construct for the purposes of research. What we are left with, then, is a literature full of small case studies, where a large number of the parameters are unknown or uncontrollable. In almost all studies, we lack precise information about what the speakers sounded like before they left their home dialect area, and the studies have not been able to control for such factors as the degree of integration (or lack of it) into the new neighbourhood by the migrant.

One larger scale study currently underway is examining the second dialect acquisition of American children whose parents are working on a US Air Force base in Eastern England. Grainger (forthcoming) examined the American (and British) children in a British school to which many Americans working at the base send their children. One advantage of this study is that she was able to gather data from large numbers of American children and in controllable circumstances in the school – this study is much larger

and more systematically sampled than any other previous SDA work. Still not solved, however, is the problem of degree of integration or of what the children spoke before they arrived – new families arrive at and leave the base all of the time, so it was not possible to follow an ideal single new cohort from first day at school onwards. Another study has managed, however, to get around a few more of these problems. Hirano (2011) examined the consequences of expatriate dialect contact amongst British, American and New Zealand English-language teachers in Japan who had arrived there as part of a specific programme (JET) with fixed term contracts. She was able to record a batch of willing new teachers as they arrived in Japan at the start of their teaching contract, and then re-record them a year later, also carefully tracking in great detail the extent and strength of their social network ties with Americans, Brits, Kiwis and Japanese as a way of measuring their integration with speakers of (roughly) the same or other dialects of English, native or non-native. The analysis of the data did show subtle convergence after a year, convergence that strongly correlated with the strength of network ties with relevant speakers. Matter and Werlen (2002: 278), however, found that social network ties did not play a significant role in the accommodation of migrants from Wallis to Bern.

For the most part, though, SDA studies have been small-scale and, it has to be said, focussed much more centrally on the linguistic findings, rather than presenting a rich synthetic sociolinguistic account. We know little about how the processes of acquisition proceed within the context of the performance of people's everyday routines in their new communities. One of the other major problems is the post-hoc nature of most of the research. It is carried out after the migrants have been exposed to the target dialect for a while, so we can not be certain of the precise nature of the original input dialect. Here, then, we can taste the cake, but we are not certain of the ingredients. It is therefore not clear that we could write down the recipe. The methodological challenges, therefore, are, on the one hand to examine this process with more social sensitivity, but on the other to provide a global overview of the likely constraints, social and linguistic, on SDA, given the unfeasibility of large scale studies that track migrants from before their move to well after.

2.3. New dialect formation

It was the study of new dialect formation that provided the primary stimulus for the expansion in research on dialect contact from the late 1980s onwards. Given the task of explaining the structures of many of the in-

digenised European language varieties found outside Europe, dialect contact approaches were adopted as a way of explaining how, for example, Australian English was structurally different from every variety of English in the British Isles, despite the fact that the overwhelming majority of its anglophone immigrants in both the 19th and 20th centuries were British or Irish. The same can be said for varieties of Spanish spoken in the Americas, French in Quebec, as well as, for example, Hindi-Bhojpuri in Fiji, Trinidad and Mauritius, and Japanese in Micronesia, and so on. Trudgill (1986) has argued that in such contexts, where different dialects are thrown together in new surroundings, linguistic accommodation becomes routine and long-term, leading to the process of koineization, whereby eventually a new dialect emerges as a result. Koineization consists of at least four processes: (i) *levelling* (the eradication of marked linguistic features, marked in the sense of being in a minority in the ambient linguistic environment after the contact ‘event’, marked in the sense of being overtly stereotyped, or marked in the sense of being found rarely in the languages of the world and/or acquired late in first language acquisition); (ii) *simplification* (the process by which a contact variety becomes more regular, having fewer categories, fewer person/number inflections, or fewer complex constraints on variation than the dialects in the original mix); (iii) *interdialect formation* (the emergence of forms which were not present at all in the input dialect, but which clearly emerged as the result of the imperfect convergence of two or more such inputs) and (iv) *reallocation* (the refunctionalization of two or more input forms to perform new linguistic or social duties as part of the new dialect repertoire) (see Britain and Trudgill 2005). Studying how new dialects formed well after the event, however, has thrown up a vast number of methodological problems. How did they develop as they did? Once again, we know what the cake tastes like, but what were the ingredients and what was the recipe?

- We need to know where people came from in the donor community, of what backgrounds, in what numbers, and what dialects they brought with them;
- We need to understand “the ethnographic setting in which the ... displaced population has come into contact with ... other populations whose structural features enter into the competition with its own features” (Mufwene 1996: 85). Has the transported dialect engaged in *language* as well as dialect contact?
- We need to know about the language ideologies that speakers brought with them, as these, it has been argued, may affect their stances both

towards different varieties present in the post-contact dialect mix, but also towards the standard metropolitan variety;

- We need to know more about what Mufwene (2001) calls the ecology – the nature of social life – of the early post-contact society.

Some early research on new dialects, however, did not take all of these essential factors into consideration. I provide two examples that highlight this here; one from New Zealand English (Britain 2008), and another from the formation of Taiwanese Mandarin (Kuo 2005).

New Zealand English (NZE) began to be formed from the mid-19th century onwards as a result of migration from the British Isles and Australia. One oft-cited characteristic of NZE is a pronunciation of the MOUTH vowel, /au/, as [ɛu - ɛə - ɛ:] with a mid-open front nucleus. These realisations have almost always been labelled as ‘strongly stigmatised’ (e.g. Gordon 1983, 1994; Maclagan and Gordon 1996: 7), though evidence suggests that they are by far the majority form in NZE informal speech. These mid-open front realisations have traditionally been explained as a result of a change from [aʊ], a fronting and raising, therefore, of the nucleus (e.g. Wells 1982: 256, Labov and Ash 1997: 514). Maclagan, Gordon and Lewis (1999: 22), for example, claim that “the diphthong variants that are stigmatized are those associated with a relatively recent shift ... there are now very few ... [aʊ] variants of /au/ which earlier would have represented the most conservative, least stigmatized variants of the diphthong. Similarly, the first elements of the stigmatized variants have raised over time”, as well as “in New Zealand, the first target of /au/ is typically progressively fronted and raised by lower social class speakers. Tokens with a relatively open first target ([aʊ]) were classified as conservative, those that started on [æ] were classified as neutral, and those with raised first targets ([ɛ]) were classified as innovative” (1999: 29). This account clearly suggests that NZE shifted from [aʊ] to [ɛu - ɛə - ɛ:].

If this were really the case, then we would need to demonstrate convincing evidence that [aʊ] was indeed once a widely used vernacular variant of NZE and that it was the dominant, or at least one of the dominant forms brought to New Zealand by British and Irish migrants. The evidence suggests the opposite, however. Britain (2008) shows that, firstly, mid-open front variants of MOUTH have been identified as significant variants in even the very earliest studies of NZE. Secondly, the demographic and historical dialectological evidence from the British and Irish migrant communities does not support an [aʊ] origin for contemporary NZE pronunciations of this diphthong either. The demographic evidence robustly

demonstrates that the dominant migration to New Zealand came from Southern England, with smaller waves coming from Scotland and Ireland (see Britain 2008 for a survey of this evidence). The dialectological evidence, from a series of surveys that were investigating the dialects of speakers born at roughly the same time as those migrating to New Zealand (Ellis 1889; Wright 1905; Kurath and Lowman 1970³) showed that the overwhelmingly dominant forms used in Southern England (and Ireland) were [ɛu - ɛə] and [əʊ]. [aʊ] was barely reported at all in the south of England, except as one of a number of variants in London, and the variant used in the far west of Cornwall in the English South-West. Kurath and Lowman's description of the pattern of MOUTH use in southern England neatly summarises what was found by all of the relevant dialectological surveys of the time: "in most of the eastern counties ... the reflex of M(iddle) E(nglish) ū is a diphthong starting in mid-front or lowered mid-front position and gliding up toward [ʊ]. In the central counties this [ɛʊ - ɛu - əʊ] is universal. In Norfolk and ... the western counties ME ū has yielded [əʊ] ... it is noteworthy that the Standard British English type [aʊ] does not occur in the folk speech of the section of England dealt with here" (Kurath and Lowman 1970: 5). I have argued (Britain 2008) that, given the dominance of mid-open front forms in the British dialects spoken in those areas that dominated migration to New Zealand, the present NZE realisation of [ɛu - ɛə - ɛ:] has focussed as a result of it being in the majority in the early NZE dialect mix and the consequent levelling away of other minority variants over time. This account allows for researchers finding some other variants in the early NZE variant pool, but takes seriously the demographic and dialectological facts which clearly dismiss a raising from [aʊ] as a viable course of contemporary [ɛu - ɛə - ɛ:]. If we return to our cake baking analogies once more, then here we could say that we know what the cake tastes like, but it seems that some people have assumed the wrong ingredients and followed the wrong recipe.

Another issue that arises from the development of /au/ are the language ideological questions that surround the 'stigmatisation' of [ɛu - ɛə - ɛ:]. Early sociolinguistic accounts of linguistic change have relied quite heavily on people's language behaviour being influenced often strongly by the ways in which dialect forms are evaluated vis à vis the standard. Forms which are non-standard, dominant in conversational speech, but perhaps used less when performing formal oral tasks such as reading a short story aloud or a list of minimal pairs, and forms which raise comment from 'language guardians' are often labelled as 'stigmatised'. 'Stigma' is defined by the *New Oxford Dictionary of English* as "a mark of disgrace associated

with a particular circumstance, quality or person” (Pearsall 1998: 1826). I would argue that this term is overused in sociolinguistics – the juxtaposition of, on the one hand, the considerable, routine and systematic use of a feature by millions of speakers and its being, on the other, “a mark of disgrace” seems, to me at least, to be untenable. ‘Stigma’ in some forms of sociolinguistics seems actually to mean something like ‘not adhering to formal normative ideologies about ‘correct’ language use’. In the contemporary Western world, many of these ideologies are diffused and transmitted via institutions such as the media, the education system and public administration. But this then leads us back to question the nature of linguistic ideologies at the time of the dialect contact. We cannot assume that these same conditions held then as hold today. As detailed in Britain (2005), for example, language ideologies were likely to have been considerably different 150 years ago among the early Anglophone settlers in New Zealand.

- In mid-19th century Britain, the time of significant migration to New Zealand, there was no compulsory education. Consequently there was no universal institutional medium for the vast majority of children to be indoctrinated with the ideology of the standard language, and no formalized locale where children were brought together for that purpose;
- Literacy levels were very much lower than today – Cipolla (1969) highlights that almost a third of bridegrooms and almost half of all brides in Britain were unable to sign their names in the register on their wedding day; Belich (1997: 393) puts the illiteracy rate in New Zealand in 1858 at 25%;
- Daily life for many people in mid-19th century New Zealand revolved around survival. The departure of millions in search of a better life in North America and the Southern Hemisphere was triggered by the extremely poor living conditions in 19th century Britain. Food and shelter were more important concerns than whether they pronounced /au/ ‘correctly’. Physical not academic toil was most certainly the priority of the vast majority;
- 19th century New Zealand society was less class-orientated and less deferent than the society the migrants had escaped from. As Belich argues, many, in moving to New Zealand, engaged in ‘custom shedding’: “For European settlers migration was a chance to select cultural baggage – to discard as well as take. Highly overt class differences ... excessive deference towards the upper classes and customs that publicly implied subordination were leading candidates for the discard pile” (Belich 1997: 330).

I do not want, of course, to argue that 19th century migrants did not have language ideologies, but simply that without a standard indoctrination, evaluations of language would likely have been much more locally grounded: local versus non-local, young versus old, this village versus the one over the hill rather than ‘right’ or ‘wrong’, ‘standard’ or ‘non-standard’ (Britain 2005). We cannot assume that the vast majority of the population ‘stigmatised’ non-standard /au/ in New Zealand, even if School Inspectors there did (Gordon 1983). We must, therefore, understand the social, cultural and ideological ecologies of the community *at the time of the new dialect formation*, and not simply transpose 21st century ideologies to 19th century contexts.

Another problematic example of new dialect formation comes from the emergence of a Taiwanese variety of Mandarin. A significant Mandarin speaking community only developed on Taiwan after the flight to the island of Chinese Nationalists pushed out of Mainland China by Mao’s Communists in the late 1940s after the Chinese Civil War. When the Nationalists arrived, they found a population that spoke either an indigenous language or one of a number of Chinese languages, but very few speakers of Mandarin, the dominant Chinese language on the Mainland. The numerically most important language spoken in Taiwan was Southern Min, spoken by around three-quarters of the population. The new Nationalist rulers from the Mainland were mostly Mandarin speaking and imposed their language as the language of education. Over time, a Taiwanese variety of Mandarin emerged. The previous literature on Taiwanese Mandarin suggested strongly that this new variety was different from Standard Beijing Mandarin because of the second language acquisition failure of the Southern Min speaking population – in essence, that Taiwanese Mandarin was a result of the inability of the Taiwanese to learn Mandarin accurately. Earlier researchers pointed to the fact, for example, that whilst Standard Beijing Mandarin had four retroflex consonants in its inventory, Southern Min had none, and so, when learning Mandarin, the Southern Min speakers merged the retroflexes with corresponding non-retroflex sounds, and diffused these non-retroflex consonants to the population at large, including to the children of original mainlanders (see Kuo 2005 for a long review of the claims to this effect). Through a very careful analysis both of the structure of Chinese dialects in the middle of the 20th century, and census information on the regional origins of the migrant mainlander population, Yun-Hsuan Kuo (2005) demonstrated that whilst retroflexes were common in central Beijing, they were rarely found elsewhere in China, and were almost entirely absent in those areas from which the mid-20th century migrants to Taiwan had originated. The merger of retroflex and non-retroflex, proposed by earlier researchers,

seems untenable given that retroflex consonants were barely used at all by the Mandarin speaking population of Taiwan, let alone the Southern Min speakers. In Taiwan, there were simply no retroflexes to merge with. Kuo (2005) argued, reviewing the evidence, that the lack of retroflexes (and other features of Standard Beijing Mandarin) in Taiwanese Mandarin was a simple result of them not having been brought to Taiwan in sufficient numbers in the first place, and the few that were brought, being highly marked, were swiftly levelled away. Once again, the arguments circulate around the recipe and the ingredients and not the cake itself. We know what the cake tastes like, but, here at least, and in the New Zealand English case, there are disputes over what went in it, and how it was baked.

Central to these disputes about new dialect formation, clearly, are the relationships between the dialects of the ‘donor’ community and those studied, usually later, in the new dialect community. These arguments have prompted scholars to examine diaspora dialect formation in two distinct ways. Some (e.g. Poplack and Tagliamonte 2001; Tagliamonte 2002) have argued that in order to establish firm and direct connections between donor and recipient communities we need to not only find the same features in both, but also to ascertain that each feature is embedded in the grammar in the same way, with the same grammatical and other linguistic constraints on variation. This has led them to examine relatively isolated rural dialects of England, Scotland and Ireland, and compare variation there with similarly isolated, long-standing communities in North America. If the linguistic constraints on variation operate in the same way in both locations, then a firm link can be established. A good deal of the early work in this vein was carried out in order to demonstrate that many characteristics of African American Vernacular English did in fact have their roots in British non-standard dialects.

Dialect contact approaches have recognised that these very strict conditions for a link are rarely if ever sustainable, given the social and geographical mobilities of speakers once arrived in the new speech community, and the linguistic consequences of accommodation between mobile speakers who come into contact. Belich, commenting on New Zealand, highlighted just how mobile speakers were 150 years ago – between half and three-quarters of all households in the mid-nineteenth century were gone ten or fifteen years later (1997: 414). Expecting pure and untainted transmission from donor to recipient variety in contexts of high mobility is perhaps a too strict condition to set in such circumstances. Contact approaches, assuming koineization and convergence, set somewhat looser linguistic criteria for demonstrating a connection between potential donor and recipient, but do

place more importance on careful demonstrations of demographic relationships.

Another criticism of the methodological approaches of new dialect formation research is that all of the work has been posthoc – the new dialect has emerged, a century or more has passed, and then we reflect on how that dialect emerged all those years ago. Useful, it was argued, would be to examine new dialect formation in progress. Kerswill and Williams attempted this in their study of Milton Keynes in south-east England (e.g. 2000). Milton Keynes is a New Town, ‘created’ in the late 1960s from the merger and extraordinary expansion of a few small villages into a city of over 200,000 people. They studied children, native to the new community, contrasting them with their primary caregivers, not native. They were able to demonstrate elements of koineization in progress, but many of the features emerging in the new dialect were also emerging in many similar communities of the south-east of England, especially those which, like Milton Keynes, had seen high levels of mobility and transience. Distinguishing, then, between what was happening as a result of new dialect formation in light of the clash of dialects in the new city (which, perhaps unfortunately, were predominantly South-Eastern dialects anyway) and what was happening because of everyday routine mundane mobility in the south-east of England (see Britain in press) generally, was extremely difficult. Here, then, we can see that the cake baking analogy breaks down – in this case we know the ingredients pretty well, we know the recipe from earlier studies of dialect contact, but we cannot be entirely sure when the cake is ready to take out of the oven – in fact, of course, all such cakes carry on baking, with new ingredients added all the time (and some already added ingredients removed). New dialects are variably affected by ongoing social mobility that characterizes the broader regional context in which they have developed. Ideal conditions for witnessing ‘pure’ new dialect formation would, of course, be a mixture of donor dialects arriving in a new community with no indigenous or local population and no subsequent contact with the donor or any other community for a few hundred years. Unlikely, of course. Many of the new dialects studied in the literature emerged in the context of ongoing contact with the donor variety, as well as contact with local languages – Maori in New Zealand, Aboriginal languages in Australia, Native American languages in the Americas, etc. Schreier’s (2003) research on Tristan da Cunha, a small anglophone community in the South Atlantic, did present a community that had been largely isolated for many decades since first settlement (enabling a highly distinctive variety to emerge), but he was also able to demonstrate the linguistic consequences of the recent increasing contact Tristanians were having with non-island varieties. One community

in which migrants were not faced with the presence of a pre-existing local language was the Falkland Islands in the South Atlantic, but here the population has been rather turbulent and mobile over the 180 years since first settlement (Britain and Sudbury 2010; Sudbury 2000).

2.4. Supralocalization and innovation diffusion

More recently in the dialect contact paradigm, researchers have highlighted how, as a result of everyday mundane mobilities, such as short-distance housemoves, commuting, the geographical consequences of increases in tertiary-sector education and economic development and in consumption mobilities, locally specific dialect forms are losing ground to forms found across a wider geographical area (see Britain 2010; in press). One example of this is the rise and rise in England of the glottal stop as a variant of /t/, so ‘butter’ [bʌʔə], ‘cut’ [kʌʔ]. Milroy, Milroy and Hartley (1994), for example, demonstrated how in Newcastle in the North-East of England, local [tʔ] variants of /t/ were gradually being replaced by the nationally spreading glottal stop [ʔ]. In tandem with this, scholars have noted the increasing tendency for certain dialect forms to diffuse extremely rapidly, both across individual countries and even beyond. In the British context, one such dialect form that has spread rapidly in the last half century is the fronting of /θ/ and non-initial /ð/ to [f v] respectively (e.g. ‘think’ [fɪŋk], ‘mother’ [mʌvə]). Kerswill (2003) charts how this feature was largely confined to London and Bristol before 1950, but has reached many parts of England and Scotland since. Many studies of individual locations around the country have examined it and shown it to be on the increase.

Methodologically, though, identifying innovation diffusion and supralocalization are not as straightforward as they might first appear. Crucial to many of these problems is the identification, once again, of the donor variety. Let’s take innovation diffusion first. Too frequently argued in studies of innovation diffusion in the British Isles is the following:

- a) Large influential city A has as a dialect feature X;
- b) A study of City B, possibly 200 or 300km away from A, finds X as an incoming innovation;
- c) Conclusion: X comes from A.

Such has been the implicit assumption in a good deal of the work on innovation diffusion. In some cases, it may be true, and such validations appear more robust if we can establish the direct demographic connection that we

sought in the new dialect formation research above. What tends to be forgotten is that if city B is adopting feature X, then cities M, N, O, P etc may also be doing so or may have already done so. Thereby, the origins of variant X in city B may possibly be more accountable through contact with M, N, O and/or P than contact with A. Innovations may rather rarely be adopted as a result of contact with the original source of that innovation, rather than due to more direct and sustained contact with much more recent and nearby adopters. The adoption of a number of linguistic innovations by residents of many cities across the British Isles has been blamed on the influence of London, even though direct contact between London and these cities is demographically limited.

Identifying the source dialect is even more problematic in the case of studies of supralocalization. Supralocalization assumes that one variant of a variable emerges as victor at the expense of other locally restricted ones, presumably because at the time of the mobility it was more widespread than the others. Again, as with much new dialect formation research, what we witness is the emerging dominance of one variant without being sure where that variant came from. It is consequently more difficult to ascertain how it succeeded. Similarly, supralocalization assumes that a feature becomes dominant in several places, across, for example, a whole region. Identifying the multilocality emergence of one feature at the expense of possibly a number of different others is difficult for practical reasons – it is rarely feasible to collect similarly robust datasets from enough locations within the supralocal domain to be able to securely demonstrate the emergence of the same feature (with the same linguistic constraints on its appearance) in many places at a similar time. The ubiquity of the glottal stop demonstrates this very issue. It is found in many different parts of England, but seems to be subject to slightly different linguistic constraints in each. In some places it is blocked in turn-final positions, in others it is even possible in syllable initial positions if the /t/ occurs in an unstressed syllable (e.g. ‘go tomorrow’ [gʌʊʔəmɒɹɪə]). So are we dealing with the same supralocal feature? Or a supralocal feature which has ‘indigenised’ slightly differently in each place of occurrence? Or should we not see these different manifestations of the glottal stop as related at all? Some multilocality studies even in the same area have found similar problems. Przedlacka (2002) investigated the possible emergence of a supralocal variety of English in the south-east of England, and examined four locations north, south, east and west of, but not far from, London. She found statistically significant differences between the four locations for most of the variables she studied suggesting that this area was certainly not yet supralocalized, but that, perhaps, similar trends were underway at different speeds and intensities in the dif-

ferent locations. Hard and fast evidence of supralocalization has, in fact, been extremely difficult to pin down securely. It has been theorized extensively within the dialect contact literature, but not yet sufficiently and robustly evidenced. In this case we have a number of different cakes that have been baked, all in the same kitchen, all with (presumably, though we don't know for sure) slightly different ingredients, and according to an unsure recipe. We assume they all taste similarly, but we have only been allowed to try one or two, so we do not know for sure. Despite these culinary problems, however, we have already written the cookbook about these cakes.

3. Conclusion: A long way to the cookbook?

This paper has attempted to overview some methodological issues surrounding the practical study of dialect contact in its various forms. Despite the maturity of the discipline now, methodological questions and difficulties remain. In many cases, these difficulties relate to the identification of the ingredients of the dialect contact, not only when the contact took place hundreds of years ago, with our limited understanding of how migrants spoke at the time of migration or indeed where they came from, but also in the case of present-day examples of contact, driven by rather mundane, but incredibly intensive, turbulent contemporary mobilities. In other cases, difficulties arise because of the interference of what appear to be standard ideologies in our theorization of change. As we saw earlier, for whatever reason, New Zealand English and Taiwanese Mandarin were assumed to have changed simply because they were different from Standard English and Standard Mandarin respectively, even though these standard varieties were insignificantly represented among the founders of the two communities. And in some cases, it is quite simply the nature of social life – mobile, unpredictable, individual – which impedes a clear view of the consequences of contact. Neat, tidy samples of speakers are simply not compatible with the reality of human mobility. The new dialect recipe is, thanks to 25 years of research since *Dialects in Contact*, becoming clearer, but it is still important for us to put painstaking effort in to understand what the correct ingredients are if we want to learn how that cake was baked. As time goes on, we will perhaps have kept better records of those ingredients than are available to dialect contact cake eaters today.

Notes

1. I would like to thank the editors for their useful comments on an earlier version of this paper – they have certainly made it a much more readable paper, or perhaps I should say a much more edible cake...
2. “Simple rules are automatic processes that admit no exceptions. Complex rules have opaque outputs, that is, they have exceptions or variant forms, or – a type of complexity that comes up especially in dialect acquisition, as we will see below – they have in their output a new or additional phoneme” (Chambers 1992: 682). Chambers suggests, for example, that the eradication of Canadian flapped /t/:[ɾ] in favour of [t] is a simple rule: wherever [ɾ] occurs it can appropriately and accurately be converted to [t]. Unlike the English of Southern England, Canadian English lacks, however, a distinction between the vowels in COT and CAUGHT, BOBBLE and BAUBLE (Canadian [ɑ], Southern England [ɒ] – [ɔ:] respectively): acquiring this phonologically ungoverned distinction represents a complex rule, because speakers have to learn which vowel should be used for each lexical item.
3. Although published in 1970, the data for this survey were collected in 1930.

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Variation in a second language as a methodological challenge: Knowledge and use of relative clauses

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1. Introduction

As if acquiring a second language were not difficult enough for language learners, acquiring knowledge of how to vary speech in different situations and contexts seems to make the task even more intricate.¹ In a situation like that in the German-speaking part of Switzerland, variation is a pronounced characteristic of the everyday life of language learners. They are immersed in an environment featuring extensive use of local dialects but also use of the Standard German variety in formal instruction, written communication, and often in speech to people who are not native Swiss German speakers (Werlen 1998; Berthele 2004; Christen et al. 2010). How second language learners deal with the variation present in their everyday input and how this influences their language acquisition and use have yet not been the focus of much study. However, insights into the use and the knowledge of features that are subject to variation in the two co-occurring varieties are interesting for their implications for the cognitive and social dimension of language acquisition.

In the early days of second language acquisition (SLA) studies, variation was discussed mostly in terms of developmental patterns in the acquisition process over time. In recent years, the acquisition of variation, e.g. sociolinguistic or regional variation, has attracted increasing attention in second language studies (Dewaele and Mougeon 2004; Bailey and Regan 2004). This work has addressed diverse issues, including regionally or contextually marked phonetic realizations (Beebe 1980; Drummond 2010), the use of syntactic constructions in more or less formal situations (Regan 2004; Li 2010), and the use of forms of address (Dewaele 2004). Influenced by variationist studies and quantitative sociolinguistics as well as by traditional second language research, these studies mostly apply a group-study approach with different data-collection methods, such as conversations, sociolinguistic interviews, observation, questionnaires, and others.

Deciding on an appropriate method of data collection is often not straightforward in second language research. Along two dimensions, from

naturalistic to experimental and from learner speech productions to learner reflections (Chaudron 2003: 764), a wealth of methods based on natural speech, prompted speech, or non-linguistic experimental tasks can be distinguished (for comprehensive overviews see Mackey and Gass 2005, Gass and Mackey 2007). Furthermore, the design choice between longitudinal case studies and cross-sectional group studies has to be made (for examples, see Chaudron 2003: 774–776). Case studies provide an excellent ground for in-depth analysis of individual acquisition processes. But second language learners are often vastly different, and group studies are more apt to capture issues of acquisition and use across individuals.

This paper is based on an exploratory small-group study that combines free-speech analysis, elicited translations, and metalinguistic judgments, and aims at an investigation of how the acquisition of variation by adult immigrants to Switzerland can be described. In pursuit of this goal, the focus is the knowledge and use of one exemplary grammatical phenomenon that is formally different in the two varieties under study: relative clauses. German relative clauses in speech have been investigated from different point of views: grammar, semantics and information structure (Weinert 2004; Birkner 2008) and dialectal variation (Fleischer 2004, 2005), but also from the developmental perspective in first and instructed second language acquisition (Brandt et al. 2008; Byrnes and Sinicropo 2008, who, however, focus on written language). These studies establish a basis upon which to examine relative clauses as used by second language learners in a mostly untutored situation with variation in the input.

Data from different sources will be presented, and the methodological and interpretative challenges in second language research in general and in this particular acquisition situation will occupy an important place. First, the topic of *acquisition of variation* is introduced (Section 2) by explaining the notion of variation in the context of second language acquisition and its significance in the particular Swiss context. Section 3 highlights the variational aspect of the phenomenon under investigation – *relativization* in Standard German and in Swiss German dialects. The methodology of the study from which the data are extracted is presented in Section 4. Next, Section 5 discusses what these methods can show about one exemplary phenomenon subject to variation, namely relative clauses, in free speech and in a small translation and preference task completed by second language learners. Concluding remarks close the paper.

2. Acquisition of variation in a second language

2.1. The concept of variation in the context of second language acquisition

The term “variation” has two different meanings in the context of language acquisition. Rehner (2002: 15) distinguished between *type 1* and *type 2* variation. Whereas type 1 variation concerns alternations between target-like forms and target-deviant forms that are not part of native speech, type 2 variation “manifests itself via an alternation between forms that are each used by native speakers of the target language.” In language acquisition research, the study of type 1 variation in the form of the study of developmental patterns and continuous approximation of target forms has prevailed for a long time. With respect to language proficiency, the learner’s main aim is to reduce type 1 variation, manifest type 2 variation and be able to vary speech in a native-like manner. However, from a social or interactional point of view, native-like proficiency may not be the ultimate ambition, as non-target-like structures can be deployed strategically and in a very efficient way (Firth and Wagner 2007: 765).

The nature of the constructions, elements, or features that are subject to type 2 variation differs considerably. In human languages, most variation is consistent and therefore predictable. Variation can be conditioned by the linguistic context, e.g. determiner agreement in gender or case with the noun, or it can be determined by social and other external factors, e.g. the use of a certain form of address or a certain form of speech. This means that learners have to acquire a set of variables as well as the appropriate contexts of usage. The evidence regarding whether and to what extent adults regularize or adopt variation in the input originates from different contexts, including acquisition of “miniature languages” in experimental contexts (Hudson Kam and Newport 2005, 2009), classroom-based second language acquisition (Dewaele 2004; Li 2010) and studies on untutored language acquisition (Beebe 1980; Klein and Perdue 1993; Drummond 2010). The studies indicate that learners reproduce the variation present in the input depending on different factors, with the most important ones being complexity and access to variation. This ties in with the definition of *complexity* as “synonymous with the difficulty of the acquisition of a language, or a subsystem of a language, for adolescent or adult learners” (Trudgill 2009: 98–99).²

The variation in relative clauses across two different dialects that is examined in this paper is interesting with respect to complexity and access.

As explained in more detail in Section 3, relativization is not equally complex in both varieties in terms of its formal means. The different patterns are accessible as a result of being embedded in the two respective varieties. These two varieties each constitute a complete system, and native speakers vary in their use of relative-clause pattern depending on the overall choice of variety at the moment of speech. The factors that influence the choice of one or the other variety must therefore first be described in more detail.

2.2. The language-learning situation

Language variation is present in many acquisition contexts, but clearly stands out in a diglossic situation like that in the German-speaking part of Switzerland, where two varieties coexist in everyday spoken and written communication (Berthele 2004; Werlen 1988, 1998; Christen et al. 2010).³ The local dialects dominate everyday spoken forms of communication between autochthonous speakers in all contexts, but also on Swiss TV and radio broadcasts (except newscasts). The Standard German variety is used almost exclusively in institutional forms of communication (e.g. in an academic environment) and when communicating with people from abroad or from other German-speaking countries who do not understand the local dialect. Standard German is usually also the language of instruction. The main aim of courses in the local dialect is commonly to help learners who have at least a basic knowledge of German as a foreign or even as a first language to understand and then eventually also produce the local dialect.

The local dialects serve as the medium of spoken communication among all social classes, and the citizens of the German-speaking part of Switzerland use them to express their local identity (Werlen 2005: 26). With respect to the “in-group” value of the dialect, the social implications of the choice to use one variety or the other when speaking to immigrants cannot be neglected. Choosing the local dialect can indicate the willingness to integrate someone and consider him or her as belonging to the community, or it can indicate lack of willingness to make the effort to accommodate to a form of speech that is easier for some immigrants to understand (Christen et al. 2010: 61).⁴ Studies on the use of local dialects and the standard variety have shown that Swiss people use the local dialect in communication with non-native speakers, although only to a limited extent (Ender and Kaiser 2009; Christen et al. 2010). Christen et al. (2010) looked at language choice on the police hotline and discovered instances of “foreigner talk”, or language use that runs counter to a strict separation of the two varieties by

native speakers. All in all, these results underline the fact that speech addressed to non-native speakers is subject to considerable dialectal variation (and that is ignoring for the moment that the surrounding dialects are also different from each other).

The dialect and the standard-like speech that learners are exposed to are very similar but nevertheless distinct varieties that differ in many respects (Rash 1998): besides major differences in lexis and phonology, there are dissimilarities at the morphological and syntactical levels, such as the connection of relative clauses and infinitive phrases (see Bucheli Berger, Glaser, and Seiler, this volume), different word order in modal past constructions, verb doubling in motion-verb constructions, the collapse of nominative–accusative marking in masculine noun phrases in the dialect, and the imperfect–perfect difference. Most of the morphological and syntactic differences are not highly frequent in speech, which makes their examination in learner speech a challenging, though very interesting, methodological undertaking.

3. Variation in relative-clause patterns in Standard German and Alemannic varieties

The basic type of German relative clause is generally defined as a subordinate clause that serves as an attribute to a nominal element. It usually immediately follows the nominal element and starts with a relative marker (Lehmann 1984: 45; Eisenberg 1999: 263). Besides prototypical relative-clause constructions, there are a number of constructions on the borderline between relative clauses and indirect questions, subject/object complement clauses, or other attributive clause types (Birkner 2008: 13–31).

In the basic type of relative clause – characterized by the reference to a nominal element with a phoric element – the form of this phoric element is the crucial distinction between relative clauses in different German varieties: Standard German mostly uses relative pronouns that agree in number and gender with the preceding nominal element (i.e. *der*, *die*, *das* – forms equivalent to the articles⁵) and are case-marked according to their syntactic role in the subordinate phrase. Furthermore, the pronoun *wer* (agreeing in case and not in gender) can connect preposed relative clauses; the particle *was* can be used to refer to indefinite neuter pronouns like *das*, *etwas*, *alles*, etc. ('the thing(s)', 'something', 'everything'). Uninflected particles such as *wo*, *als*, *woher*, *womit*, etc., can mostly be replaced with a combination of

preposition + relative pronoun and are used for adverbial or prepositional object relatives. The particle *wo* is the most common of these connectors and is used for local and temporal deixis in a very broad sense (Birkner 2008: 261–263). With regard to the fact that in spoken language *wo* is used in many semantically imprecise conditions where a substitution with preposition + relative pronoun would be possible, Birkner (2008: 263) hypothesizes that this choice could reflect speakers' avoidance of case inflected complex junction.

In contrast, in the Alemannic dialects the uninflected particle *wo* serves as the main relative marker. It is used for relativization on subjects and (direct) objects and in some Alemannic dialects also on indirect objects (Fleischer 2004: 227, using the terminology of Keenan and Comrie 1977). Indirect, genitive, and oblique object relative clauses mostly require additional elements (prepositions, pronouns),⁶ but their use is very limited in speech. Furthermore, *wo* is used in all the local and temporal contexts that conform to Standard German in the widest sense. At the same time, it has to be mentioned that the use of relative pronouns is not completely excluded from dialectal speech. "The relative clause introduced by *dä* (SHG *der*) instead of *wo* is the most obvious and most often criticised case of syntactic shifting" (Werlen 1988: 104). This kind of syntactic shifting could also happen in the other direction and manifest itself as the overuse of *wo*.⁷ Even if such uses are to be considered outliers, the possibility cannot be excluded that learners have been exposed not only to consistent variation between the varieties, but to a small extent to inconsistent variation.

In the context of acquisition, relativization is generally considered to be a feature of advancedness (Odlin 1989: 97). On the basis of a longitudinal L1 case study, Brandt et al. (2008) argued that German relative clauses evolve (via V2-relatives) from simple non-embedded sentences. Byrnes and Sinicrope (2008) examined relative clauses in a longitudinal study of instructed learning of German by English-speaking students. They showed that the full range of relative clauses was already used in written production at lower course levels and that relativization progressed in terms of overall frequency (up to a proportion of 13%) in these written texts.

Relative clauses are fairly infrequent but constituent parts of spoken language. The numbers given for instance of relative clauses in spoken German depend on the choice of procedure for counting and defining relative clauses. Weinert (2004) calculated the number of relative clauses relative to the number of words in a passage: in her spoken corpora, covering a range of formality contexts from academic to casual conversation, relative

clauses appeared from approximately every 230 words to approximately every 620 words.⁸ Other researchers counted attributive subordinate clauses – of which only some are relative clauses – and put their frequency at about 8% of total utterances (Patocka 2000: 303, cited in Fleischer 2005: 172) or at just above 11% (Höhne-Leska 1975: 59).⁹ In spoken language, relativization shows characteristics including prevalence of specific constructions and use of mostly subject- and object-relative clauses (Weinert 2004; Birkenner 2008).

In the subsequent explications, relative clauses serve as an example of learners' knowledge and use of a grammatical phenomenon which features dialectal variation in their learning environment. A major concern is to show what conditions of use and elicitation have to be created so that an insight into use and knowledge of variable patterns can be gained.

4. Collecting data on use and knowledge of variation

4.1. Participants

Data from 20 second language learners of German (10 female and 10 male) with four different first languages (Albanian, English, Portuguese, and Turkish) is presented. Average age of participants was 40 years (range: 27 to 65) and average time of residence in Switzerland 17 years (range: 1.5 to 33). The group was heterogeneous with regard to educational and professional background, including manual workers with a minimal level of compulsory schooling as well as university graduates.¹⁰ The participants took part in the study voluntarily and without noteworthy compensation.

4.2. Data collection

As explained in the preceding sections, learners are exposed to dialectal variation in their everyday life, which leads to variable contact with different structural phenomena. To examine which patterns dominate in their linguistic representations and how they make use of them, a combination of data seems necessary. Free speech can give insights into use and allow inferences about the knowledge of speakers. However, as most of the structural differences with which we are concerned are not highly frequent in speech and as there is no mandatory choice of one of the two varieties, observations of short conversations are limited as a tool and demand sup-

porting evidence. A translation task and a preference task, as completed for the present study, can provide additional information on the knowledge of participants (that otherwise might not be evident) and on their awareness of the differences between the varieties.

4.2.1. Structured interviews

Structured interviews were used to gather free speech together with biographic information and participants' accounts of their experiences with second language learning and use. To provide a context in which both varieties under study were acceptable and appreciated, there were two interviewers, one speaking Standard German and one speaking vernacular Swiss German (Bernese German). Although this led to an asymmetry of interlocutors, it was the most practicable way of gathering data from the learners in conversation with speakers of both varieties. In order to keep some consistency over the course of the interviews, the two interviewers had thematically organized blocks of questions and alternated as the "main" interlocutor.¹¹ The conversations mainly followed a framework of questions on topics as follows: country of origin and immigration to Switzerland, education in general and language education in particular, language use in everyday life, perception of differences between Standard German and Swiss German, personal experiences with the two varieties, etc. Due to the different amount of spontaneous narratives produced, the actual sequencing and the total lengths of the interviews (including the two tasks mentioned below) varied from about 35 to almost 90 minutes among participants, but mostly lasted about 45 to 60 minutes.

4.2.2. Prompted language data: Translation task

Following the open questions on the main differences between the two varieties, the participants were asked to engage in a two-part translation task which could reveal more about how they perceive and distinguish the varieties. They were confronted with 10 audiorecorded sentences, five in each variety. First, they were asked by the speaker of Standard German to translate the following five sentences from the local dialect to Standard German as they would if the interviewer herself could not understand the dialect. Furthermore, they were asked to translate each sentence to their first language.¹² Then, the speaker of the Bernese dialect gave the same instructions for the second set of sentences, with Swiss German as the tar-

get variety. There was no time pressure applied during the translation, and the audiorecorded sentences were replayed if desired by the participant.

The two sets of sentences covered several structural differences between the two varieties, as explained above, and relative clauses are only one of several potentially interesting aspects that were covered. By observing which forms or constructions learners produce in translation, findings on what they perceive as typical or salient in the two varieties arise (a very similar procedure was used in Werlen et al. 2002 for an assessment of second dialect acquisition by native speakers). More generally, performance in the translation task can also give hints regarding the question of which variety participants are more familiar with or more at ease in producing.

In the present paper, we focus on the two sentences containing relative clauses. Example (1) is a Swiss German sentence with the uninflected particle *wo* used as a relative marker (for the dialect examples, an orthography following Dieth 1986 is used). Example (2) is a Standard German sentence using the relative pronoun *die*.

- (1) *Kenn-sch du vilech öpper, wo hüt zyt het.*
know-2SG you maybe somebody REL today time have.3SG
'Do you know somebody who might have time today?'
- (2) *Wir kennen vielleicht nicht alle Leute, die mit uns im Haus wohnen.*
we know maybe not all people REL with us in.DAT
house live
'We might not know all the people who are living in our house.'

Both sentences exhibit subject-relativization (Keenan and Comrie 1977), which is a very basic type of relativization that is often supposed to be learned earlier than other types.

4.2.3. Metalinguistic judgment data: Preference task

In this task, the participants were confronted with eight sentence pairs. Every pair consisted of sentences that were constructed with a morphosyntactic element in a standard-conform and in a dialect-conform (Bernese German) manner. In the focus of the present investigation are the four sentence pairs on relativization, i.e. subject-relativization in each case. There was always one relative clause introduced with the particle *wo* and another one with a relative pronoun. The purpose of this task is to identify the kind of repre-

sensation learners have about relative clauses – even if they do not produce relative clauses – through their judgments about different constructions. Examples (3) to (6) represent the four sentence pairs that were audiorecorded and played to the participants:

- | | |
|-----------------|--|
| Dialect | (3) <i>I gsee d frou, *die/wo nüb dir steit.</i>
'I see the woman who is standing next to you.' |
| | (4) <i>Du kennsch der maa, wo/*dä verbi geit.</i>
'You know the man who is passing by.' |
| Standard German | (5) <i>Ich kenne den Mann, *wo/der vorbeigeht.</i>
'I know the man who is passing by.' |
| | (6) <i>Du siehst die Frau, die/*wo neben mir steht.</i>
'You see the woman who is standing next to me.' |

The learners were asked to tell which alternative sounded better to them and to give a reason, if possible. This might at first seem like an imprecise way of eliciting grammaticality judgments, but resulted from the intentional avoidance of the terms 'right' and 'wrong'. If a more detailed instruction was requested, it was added that participants should choose the alternative that most native speakers of the variety in question would choose.

5. Relative clauses in speech and prompted data

There are considerable differences between speakers regarding the use of relative clauses in 15-minute extracts of free speech (see Table 1). The number of relative clauses used in a single extract ranges from 0 to 33 (for 181 relative clauses in total). Given the fact that the general number of utterances in the observed period varies significantly, the proportion of utterances containing relative clauses was calculated.¹³ It varies from 0% to 11% of the participants' utterances. As relative clauses are variably used in free speech by native speakers (Höhne-Leska 1975, Weinert 2004, Fleischer 2005), the broad picture of very divergent use in quantitative terms is not very surprising. It is the nature of the relative markers in combination with the frequency of use that gives some interesting insights.

The standard and dialectal patterns of relative-clause construction are not used equally. Only three participants (Eng2, Eng3, and Turk4) use the Standard German pattern of relative-pronoun agreement exclusively (one

additional person, Turk1, uses it most frequently). Three participants (Alb3, Eng5, and Port6) connect relative clauses exclusively with the predominantly dialectal form *wo*, and seven participants (Alb1, Alb2, Alb4, Eng6, Port1, Port5, and Turk2) mostly use this dialectal form. In addition to these, some other results are worthy of note: Eng1, who uses only one relative clause, uses *wo* (in a construction where it is accepted in both varieties); Port2 does not make use of relative clauses; and three participants (Port3, Port4, and Turk3) utter only very few relative clauses, most of them without any connector; finally, Eng4 uses a variety of connectors and shows the highest variability in her use of relativization.

Table 1. The amount and nature of relative clauses (RCs) in learners' speech (in order of prevalence); percentages are rounded to nearest half-percent.

participant	number of RCs	connecting elements	number of utterances	% of RCs
Port2	0	–	119	0
Port3	1	1 no marker	222	0.5
Eng1	1	1 <i>wo</i> (temporal)	97	1
Turk3	2	1 no marker, 1 <i>was</i>	203	1
Eng2	3	2 <i>das</i> , 1 prep + pronoun (<i>an denen</i>)	330	1
Port6	5	5 <i>wo</i> (1 thereof local)	295	1.5
Port4	3	2 no marker, 1 <i>die</i>	152	2
Eng3	4	2 <i>die</i> , 1 <i>der</i> , 1 <i>wo</i> (local)	209	2
Alb3	6	6 <i>wo</i> (1 temporal)	298	2
Turk1	8	6 <i>die</i> , 1 <i>wo</i> , 1 <i>wo</i> (local)	382	2
Turk4	8	4 <i>der</i> , 3 <i>die</i> , 1 <i>wo</i> (local)	346	2.5
Port5	8	6 <i>wo</i> (1 local), 2 <i>was</i>	221	3.5
Eng5	11	11 <i>wo</i> (1 local)	287	4
Eng4	13	5 <i>wä</i> ('wer'), 3 <i>dä</i> ('der'), 3 <i>das</i> , 1 <i>wo</i> , 1 <i>was</i>	292	4.5
Turk2	15	14 <i>wo</i> (3 local, 2 temporal), 1 no marker	308	5
Alb1	16	14 <i>wo</i> (3 temporal), 2 <i>was</i>	320	5
Alb4	16	15 <i>wo</i> (4 temporal), 1 <i>was</i>	335	5
Eng6	12	10 <i>wo</i> , 2 <i>was</i>	196	6
Port1	16	13 <i>wo</i> (1 temporal), 2 <i>das</i> , 1 no marker	238	6.5
Alb2	33	31 <i>wo</i> (2 temporal, 2 local), 1 <i>das</i> , 1 <i>de</i> ('die')	300	11

The variable use of relative connectors by Eng4 is an interesting example of type 1 variation (Rehner 2002). Other instances of non-target-like variation – neither conforming with the standard nor with the dialectal pattern –

can be observed, for example, in the use of the connector *was*. This relative marker should in Standard German only be used to refer to a neuter indefinite pronoun, but three of nine instances in the data conflict with such a use, as in example (7). Furthermore, only one of the eight instances (among four speakers) of *das* is used in a target-like manner; in the other instances it does not correspond in gender, as in (8), and/or in number. Finally, other instances of type 1 variation are exhibited, for example, in all the cases where a relative marker is missing, as in (9):

- (7) *de deutsch was i kann* (Eng6)
‘the German that I know’
- (8) *wegen war eine gute kollegin im kuchi das mir immer ufschrybe wenn ich eppis nicht verstend* (Port1)
‘because there was a good friend in the kitchen who always wrote it down for me if I didn’t understand’
- (9) *ich bin geboren worden in eine stadt Ø heisst (Ortsname)* (Turk3)
‘I was born in a town [that is] named (name of the town)’

Besides these formal criteria, it is also worthwhile to consider the frequency of relative clauses in speech. As relative clauses are generally considered to be a form of complex syntax and their frequent use to be a characteristic of advancedness (Odlin 1989: 97f., Byrnes and Sinicropo 2008: 112, 132), a brief additional look at length of residence as it relates to frequency of use of relative clauses might be revealing. Interestingly, length of residence does not correlate with use of relative clauses. The learners who use very few relative clauses, some of them without relative markers, or exhibit very variable use of relative clauses (Eng1, Eng4, Port2, Port3, Port4, and Turk3) are with one exception also the ones who have been living in German-speaking areas for a shorter period. At the same time, we also have learners who have had medium- or long-term exposure to German (Alb3, Eng2, Eng3, Port6, Turk1, Turk4), but do not produce more than 2.5% of relative clauses in their extracts. Furthermore, it has to be mentioned that neither education nor influence of a specific first language seem in our sample to be indicative of more or less frequent use of relativization.

With respect to type 2 variation, we have to examine whether the participants use the different patterns according to speech variety used (embedding context). As there are two interviewees, the participants might change their speech according to which person they address. We might assume that codeswitching happens and that the use of specific relative markers correlates with changes on the phonological and morphological levels. However,

in the participant data showing a predominant use of either the standard-like or the dialectal pattern, it is not the case that instances that deviate from the predominant use co-occur with codeswitching. In fact, besides the instances of relativization where the choice of relative pattern is in accordance with the embedding context, sentences similar to (10) are not rare. In addition, the contrast that example (11) exhibits between the choice of relative marker and the surrounding context calls for a more detailed look.

- (10) *aber mini sohn isch au eine grund wo hilft in die schweiz zu blybe* (Port5)
'but my son is also a reason that helps [me want] to stay in Switzerland'
- (11) *und ich habe schöne kleider mitgenommen wo ich nähen lasse* (Turk2)
'and I took nice clothes with [me] that I get sewn [for me]'

In (10), the participant produces elements of both varieties on the morpho-phonological level: the elements *eine*, *in die schweiz*, and *zu* can be considered as standard, whereas *mini*, *isch*, *au*, and *blybe* are clearly dialectal, as well as the choice of the uninflected particle *wo*. In contrast, in (11) everything except the choice of the particle *wo* can be considered spoken Standard German. Given such sentences, it seems interesting to have a look at how the use of the uninflected particle or pronominal relative markers corresponds to the overall use of the two varieties in learners' speech.

Therefore, participants are classified into three groups depending on whether their speech is – according to the present sample – very standard-like, very dialectal, or mixed. Participant use of relativization is then categorized in three ways: 1) exclusive or predominant use of *wo*; 2) exclusive or predominant use of the standard-like relative-pronoun pattern; and 3) no apparent predominance or no relative markers. Each symbol in Figure 1 represents one participant's use of relativization according to the criteria just mentioned as well as to frequency of use (marked on the y-axis).

The participants who mix elements of both varieties on the lexical, phonological and morphological levels mostly use the uninflected particle as their relativizer. It therefore seems as if the group of participants that mix the varieties is highly biased toward using the less complex pattern with the uninflected particle, in which neither the distinction between gender and number of the heading noun phrase nor the distinction between subject-, object- and oblique relatives is relevant. On the contrary, the standard-like pattern of relativization is only used by participants also using very standard-like speech in terms of lexis, phonology, and morphology. The persons who do not show any predominance in relativization strategy fall into the

“rather standard” and “mixing” groups with regard to their general language use.

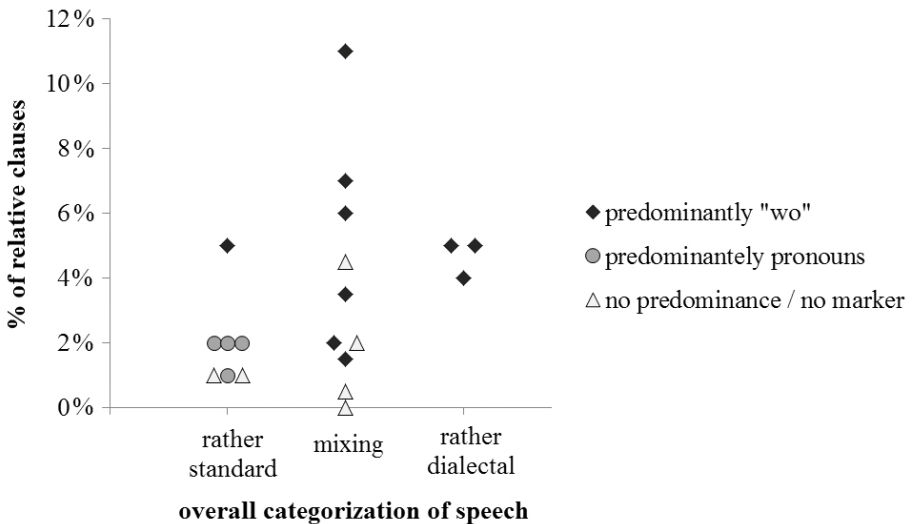


Figure 1. The percentages of relative clauses in the speech of learners according to the use of relative markers (predominantly *wo*, predominately pronouns, no predominance) and an overall categorization of their speech into (1) standard-like, (2) mixed, or (3) dialect-like

Furthermore, the use of *wo* is not necessarily tied to dialectal or mixed speech. There is one learner (Turk2) who makes almost exclusive use of the uninflected particle to connect relative clauses, even though her speech is very standard-like from both a phonological and morphological perspective. She uses the particle to connect subject-, object- and adverbial/oblique relative clauses, and overuses it also to connect a genitive relative clause, as in (12)

- (12) *und dann war ein haus leer im dorf wo besitzer im deutschland war* (Turk2)
 ‘and then a house in the village was empty the owner of which was in Germany’

The recurring use of the uninflected particle *wo* could be considered as an example of the kind of syntactic shifting mentioned by Werlen (1988). From an acquisitional perspective, it can be considered a form of crosslinguistic influence between the two varieties present in the learning environment (Jarvis and Pavlenko 2008). This interpretation is probably more adequate than any attempt to apply the term “switching”, which presupposes

that the other variety is accessible but temporarily overrun – there is no evidence that the learner has knowledge of the pronominal use. Therefore, the findings about what is used in an elicited production and in a metalinguistic judgment task can give interesting supplementary evidence, as in the cases of Turk2 and many other participants. Tables 2 and 3 display the choices of different speakers in translating a sentence from each variety to the other.

Continuing the analysis of the relative-clause use of Turk2, we can observe that she retains the uninflected particle also in translating a dialect sentence to Standard German (Table 2), while in translation from standard to dialect (Table 3) she adds *wo* to the pronoun *die*. This corroborates the assumption about the generalized status of the uninflected particle in her knowledge. The same seems to be true for another three participants (Alb1, Alb4, and Eng6), who maintain the particle in the translation to Standard German and use it in the translation to Swiss German.

Table 2. Choices for the relative marker in the translation to Standard German

	numbers	%	
<i>wer</i>	1	5	Eng4
<i>wer/wo/Ø</i>	1	5	Port5
Ø	2	10	Eng1, Turk3
<i>der</i>	5	25	Eng2, Eng3, Eng5, Turk1, Turk4
<i>wo</i> (= no change)	6	30	Alb1, Alb2, Alb4, Eng6, Port1, Turk2
no translation	5	25	Alb3, Port2, Port3, Port4, Port6

A speaker with a lot of variation in relative markers (Eng4) chooses *wer*, which is also her most frequent marker in free speech, in both contexts. Another person (Port5) makes three different attempts for the translation to Standard German, but adequately translates to the dialect on first try. Two of the learners who are at a fairly beginning level of German (Eng1, Turk3) and who produce very few relative clauses in free speech translate without a relative marker to the standard variety. Into the other direction, Turk3 does not translate the sentence due to what he identifies as his lack of knowledge about the dialect; Eng1 uses *wer*. The five participants who translate into the standard-like form with *der* are with one exception speakers who predominantly use relative pronouns in their free speech (Eng2, Eng3, Turk1, and Turk4). These four speakers also do not exchange the pronoun with the uninflected particle in the translation to Swiss German. This indicates that they are biased toward the Standard German pattern. Finally, five learners cannot translate the Standard German sentence, and

four learners cannot translate the dialectal sentence. The members of these groups only partly overlap, but some learners seem in fact to have difficulties understanding or processing the German relative clauses, as they did not use any kind of relative clause in translation to their first language.

Table 3. Choices for the relative connector in translation to Swiss German

	numbers	%	
<i>als</i>	1	5	Port2
<i>die wo</i>	1	5	Turk3
Ø	1	5	Turk2
<i>wer</i>	2	10	Eng1, Eng4
<i>wo</i>	5	25	Alb1, Alb4, Eng5, Eng6, Port5
<i>die</i> (= no change)	6	30	Alb2, Eng2, Eng3, Port3, Turk1, Turk4,
no translation	4	20	Alb3, Port1, Port4, Turk3

Finally, Eng5 is the only speaker who correctly changes the relative marker in both contexts and who therefore best and uniquely masters type 2 variation in relativization. He seems to have a knowledge of relative clauses comprising correct usage in both varieties. This assumption is underlined by the fact that he is also one of two speakers who opts for all target-like items in the preference task. This leads us to the presentation of the results of the preference tasks and what they can add to the discussion so far.

Overall, the preference task confronted the speakers with more difficulties than expected. As displayed in Table 4, in all four instances a varying number of learners (from three to seven) did not perceive a difference between the presented sentences.

Table 4. The numbers and percentages for dialect-conforming, standard-conforming, or no decision on the sentence pairs in the preference task

	dialect- conforming	standard- conforming	no decision
Dialect: relative clause 1	8 (40%)	5 (25%)	7 (35%)
Dialect: relative clause 2	13 (65%)	4 (20%)	3 (15%)
Standard: rel. clause 1	5 (25%)	10 (50%)	5 (25%)
Standard: rel. clause 2	4 (20%)	9 (45%)	7 (35%)

More than half of the learners had at least one instance of “no decision” which means that they did not hear a difference between the two sentences and/or said both sentences sounded either good or odd. The eight learners who exhibited two or more instances of “no decision” were mostly those

struggling with the translations as well. These findings corroborate the assumption that some participants with very low and/or unsystematic use of relative clauses, like Port2, Port3, Port4 and Turk3, have not yet sorted out the structure of relativization. For other participants, this task adds some confusion to the evidence presented before. For example, Alb3 uses relative clauses in free speech quite regularly and consequently with the uninflected particle. At the same time, he shows great difficulty in translating and expressing a preference. It may be hypothesized that his relative clauses are unanalyzed or only partly analyzed chunks.

Furthermore, the judgments in the preference task can give hints regarding additional knowledge that was not revealed in the free speech and translation tasks. Eng1, who is a beginning learner speaking a very standard-like variety, uses only one relative clause and does not show the variety-adequate relative markers in the translations, but chooses adequately in three out of four pairs in the preference task. This does not necessarily mean that the amount of relative clauses in his speech will dramatically increase with further exposure to the language, as for example Eng2, Eng3, Turk1 and Turk4 – learners speaking a very standard-like variety and using predominantly pronouns – also produce very few relative clauses. Given the results from the preference task (75 to 100% accuracy and additional adequate explanations), it seems that Eng2, Eng3 and Turk4 are aware of the dialectal relativization pattern, while Turk1 is biased towards the standard-like pattern in the preference task as well.

Uniting these results and considering Figure 1 once again leads to an interesting observation. In fact, it seems as if the participants who stick to the more complex standard-like pattern of relativization do not use relative clauses very frequently – or to put it more dramatically, avoid relative clauses, as the necessary agreement in number, gender, and case poses pitfalls. In fact, a Kruskal-Wallis rank-sum test revealed a significant effect of type of relativizer on frequency of use ($\chi^2(2) = 9.4405$, $p < 0.01$). Post-hoc pairwise comparisons with Bonferroni-Holm correction showed a significant difference between the participants using *wo* and those using no markers or showing no predominant use of a relative marker ($p < 0.02$) and a difference just beyond the level of significance between the participants using *wo* and those using the pronouns ($p = 0.072$). The participants using the pronoun pattern and showing knowledge about relativization in the prompted data task, however, did not exhibit more frequent use than those participants who – according to the prompted data tasks – mostly seem to lack knowledge about the differences in relativization between the two varieties and have difficulties with this grammatical feature.

Odlin (1989: 99) mentions avoidance or underproduction of relative clauses due to language transfer. In the present data, we seem to observe avoidance or underproduction as a result of the structural variant that the learners choose and its inherent complexity. A higher frequency of use of relative clauses seems to depend on the condition that learners opt for relativization with the uninflected particle. For those using the personal pronouns, it seems as though relativization is significantly more complex and therefore avoided. This is in line with assumptions about the learnability of complex features (e.g. Hudson Kam and Newport 2009; Trudgill 2009), but very interestingly conforms with Birkner's observation (2008: 263) that in the speech of native speakers the particle *wo* is emerging as a highly frequent substitute for more complex preposition–pronoun combinations, with a very broad semantic range.

It is tricky to present evidence for something that is avoided, i.e. not produced. Compensatory constructions, as in (13) and (14), only add likelihood to the assumption that these participants may prefer to concatenate information that otherwise could be subject to relativization:

- (13) *ich konnte diese unterschiede nicht machen und die sind hilfreich*
(Engl2)
'I could not make these distinctions and they are helpful'
- (14) *das sind halt alles ausländer gewesen und sie haben auch nicht besonders gut deutsch geredet überhaupt* (Turk4)
'those [people] were all foreigners and they did not speak generally very good German'

These sparse references can add only little support to the assumption that relative clauses may in fact be avoided by these learners; an extended analysis on a bigger sample of speech from these learners may give important additional evidence.

6. Conclusion

This paper presented methodological challenges surrounding and findings on the acquisition of variation in untutored second language acquisition by focusing on relativization. The combination of three different methods provided insights and garnered results that none of the methods on its own would have discovered. Acquiring the patterns of relativization in both Standard German and (Alemannic) Swiss German varieties seems to be

very challenging for second-language learners, and if we assume that the focus of these learners is on effective communication might not even be the ultimate ambition. There are instances of type 1 variation in choice of relative markers in free speech, but also in the translation task. With respect to type 2 variation, most participants seem to be highly biased towards either the dialectal or the standard-like pattern in free speech. Only one participant showed native-like type 2 variation in the translation task, although the preference task showed awareness of the differences between the two varieties on the part of a few participants.

Furthermore, choice of relative markers is not totally in accordance with the more general observation of whether a learner speaks more dialectal or more standard-like speech. One participant consistently uses the uninflected particle even though her speech is standard-like in terms of lexis, phonology, and morphology. Those participants whose speech exhibits a lot of mixing mostly choose the dialectal pattern with the uninflected particle. And it seems as if learners who are open to the use of elements of both varieties then tend to choose the less complex one. The findings thus show an interesting interaction between complexity and access. Furthermore, there seems to be a correlation between the nature of the relative marker and the frequency of use. Learners who stick to the more complex standard-like use of relative markers in free speech rarely use relativization, seeming to exhibit avoidance or underproduction.

Using the sample case of relativization, the results have given interesting preliminary insights on the acquisition of variation in untutored second-language acquisition and raised issues to be investigated in the context of other linguistic features and more data. All in all, it has become clear that individual similarities and differences can be dependent on a variety of interacting linguistic, cognitive, and social factors that have to be considered carefully and thoroughly with a combination of promising methods.

Notes

1. I would like to thank Carla Hudson Kam for discussing the material, Molly Babel for “playing statistics” with me, and Bernhard Wälchli, Adrian Leemann and the anonymous reviewers for their comments on the paper. I am very grateful to the people who kindly participated in the study. This research was supported by a grant from the Swiss National Science Foundation (PA00P1_129070).

2. In SLA studies, the multifaceted nature of complexity is often examined along with fluency and accuracy (an overview of recent studies is given in *Applied Linguistics* 30 (4); see also Housen and Kuiken 2009).
3. In this paper, the notion of “varieties” is adopted, although there have been vivid discussions about the status of the two varieties in question and the notions of diglossia and (asymmetric) bilingualism in the Alemannic-speaking part of Switzerland (e.g. Berthele 2004, Werlen 1998).
4. The extent to which these learners have been exposed to the two varieties and might find the standard or the dialectal variety easier to understand depends on a complex arrangement of different factors: amount of instruction, contact with the two varieties in the learner’s personal and professional environment, etc.
5. Forms of *welch-* are rare and highly uncommon in speech.
6. Besides, the additional use of a pronoun would not be considered ungrammatical in either the subject- or object-relative clauses in some Alemannic dialects.
7. Such an overuse seems unlikely due to generally high normative awareness of adult speakers towards the standard language, and it has not been reported in the comprehensive analysis of spoken Standard German in Switzerland by Christen et al. (2010). However, Häcki Buhofer and Burger (1998: 79) and Straßl and Ender (2009: 213) report an overuse of *wo* in children’s use of Standard German.
8. Regarding the length of sentences in spoken language, researchers indicate averages of 6 to 8 or 6 to 10 words (Höhne-Leska 1975; Schwitalla 2003). The given data about relative clauses per utterance could thus be translated very roughly into a proportion of about 1 to 3.5% of spoken utterances containing relative clauses.
9. In some recordings of dialectal data, relative clauses are completely missing.
10. This heterogeneity can be regarded as a strength and as a weakness at the same time. Not excluding some groups of immigrants, e.g. skilled persons who have entered Switzerland in the context of “love migration” (Riaño 2003), gives a more realistic holistic picture, but, given the smallness of the sample, reduces the chance of finding generalizabilities.
11. With native speakers, such a situation would most probably lead to addressee-dependent codeswitching, i.e., the use of the local dialect or Standard German would depend on the current interlocutor.
12. The translations to the first languages of participants achieved different purposes. On the one hand, they should reveal whether any failure in translation was due to miscomprehension of the sentence in question. On the other hand, the translation can also give insights into possible first language-based preferences for different structures.
13. For the quantitative appraisal of relative clauses in the speech of the participants, the term utterance refers to complete or elliptic main or subordinate clauses that are apportionable according to semantic and prosodic features. Segmenting free speech is already a challenging issue in native speech (Auer 2010), and the increasing amount of ellipses, break-offs, etc., in learner speech does not facilitate the undertaking.

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Polish *tea* is Czech *coffee*: advantages and pitfalls in using a parallel corpus in linguistic research

Ruprecht von Waldenfels

1. Introduction

Parallel aligned translation corpora are collections of original and translated texts where corresponding segments are aligned on a sentence or paragraph level.¹ Since translation basically involves identical content in different languages, such corpora are a valuable source for cross-linguistic research. A specific strength of such data is their diversity and the fact that they are produced in a setting completely uninfluenced by the researcher. This sets parallel corpora apart from other primary data sources for comparative linguistics such as questionnaires, where data are crucially determined by the initial research question. Parallel corpora thus possess unique advantages.

However, parallel corpora also have specific weaknesses. In contrast to scholars from translation studies, comparative linguists are typically not especially interested in the translation process or in translation-specific characteristics of the data contained in parallel corpora. Instead, they adopt a working hypothesis of equivalence of original and translated texts in order to find out more about the languages they are working on. This assumption of equivalence is problematic and leads to methodological issues in at least two respects which will be focused on in this paper.

First, as a whole, the language of translated texts differs in important ways from original texts; assuming equivalence here can be problematic and in general, this issue seems to be the reason translations are often being perceived to be a somewhat data inferior source.

Second, more generally, just as meaning is not a stable property of linguistic items, equivalence of linguistic items across languages is not a stable relation. Meaning of actually occurring language is on any level – word form, phrase, sentence, text; semantic, pragmatic, etc. – crucially dependent on context and construal of language users (see e.g. Löbner 2002: 9 and Croft and Cruse 2004: 97f. for two different approaches to the context-dependent relationship of language and meaning). An assumption of straightforward equivalence between original and translation, as it lies at the heart of linguists' use

of parallel corpora, is problematic and a potentially simplistic working hypothesis.

The present paper is in its first part concerned with these two issues of non-equivalence and the question of how they are approached. In its second part, three applications of parallel corpus data are described that illustrate the usefulness of this data type.

The paper cites work with *ParaSol*, a *Corpus of Slavic and other Languages* that is being developed as a joint project at the universities of Bern and Regensburg. *ParaSol* contains literary prose translated into many languages with a focus on Slavic. It is specifically meant as a research and teaching tool for comparative linguistics and available after registration through a web interface. For details, see von Waldenfels (2006, 2011) and the corpus web sites at parasol.unibe.ch and www-korpus.uni-r.de/ParaSol. Examples from the corpus are cited by author name below; the reader is referred to the web site for bibliographic references.

2. Two issues in the analysis of parallel texts

2.1. Original and translated language

Translated language has been claimed to be shaped by a set of universal characteristics, dubbed *translation universals*. Baker (1993: 243) defines them as “features which typically occur in translated texts rather than original utterances and which are not the result of interference from specific linguistic systems”. She lists *explicitation*, *simplification*, *standardization*, *shining-through* and *normalization* as such universals.

Whether or not these characteristics are really universal features of translated text has been subject to intense controversy and much corpus-based research in past years; see, e.g., Mauranen and Kujamäki (2004) and the relevant articles in Kittel et al. (2004). It seems clear now that at least some of the features adduced differ with language pair, translation direction, genre and other factors (House 2008). However, whatever the precise status of these features, it seems obvious that some systematic differences between originals and translations can be observed. This is hardly surprising given that translations are secondary texts that are influenced by texts in a different language in an exceptional way.

This issue thus presents a potential problem for the use of parallel corpora in linguistic research. How can it be dealt with? Strategies are generally two-

fold. In one perspective, the problem is quite simply be seen to be of a more general nature. The argument is as follows: The range of variants and variation in a language – be it on an idiolectal, dialectal or sociolectal level; be it in terms of genres, text types or registers – is staggering, and the difficulty of generalizing to a "language" is omnipresent. Diligence in interpreting corpus data is therefore an important part in corpus-based research in general. Why should it be a problem with translations more than with other genres? This is a reasonable stance especially if, as in typological research, few original texts are available and any corpus based study will suffer from a restricted range of registers. Also, findings that point to language pair and genre specific, rather than universal, characteristics of translated languages speak for the adequacy of such an approach.

The second option – and this is usually done if resources are available – is to supplement the parallel corpus study with a study of a comparable corpus, that is, of original texts in the same language that are in some way comparable to the translation in question.

The Oslo Multilingual Corpus is an example of a corpus project where the combination of comparable and parallel corpora is explicitly part of the design. Here, both originals and translations in all languages involved are included. The set of originals and their translations forms a parallel corpus; the set of originals in different languages constitute comparable corpora. Systematic analysis of both parallel and comparable corpora is part of the established methodology of the project; see Johansson (2007) and Figure 1.

However, the construction of such balanced corpora that involve originals of all the languages involved is often difficult due to the lack of relevant sources. E.g., for Norwegian, there is an abundance of translations from English, but very little translations in the opposite direction. In ParaSol, a corpus involving more than a dozen, partly quite small languages, this strategy is even more difficult to sustain: in order to supply both comparable and parallel corpora on this scale, one would need (a) originals from all these languages and (b) translations of these originals into all the languages involved. This is very hard; there are little translations from, say, Slovenian into, say, Russian, Bulgarian, Ukrainian or Slovak to begin with; but even less texts are translated from Slovene into not only one, but all of these languages. A consequence is that ParaSol involves originals only from large Slavic and (in order to vary this factor) other languages. In any case, assessments based on a corpus such as ParaSol need to be examined critically in the light of independent monolingual corpora – which, of course, are much larger and more reliable than small comparable corpora anyway.

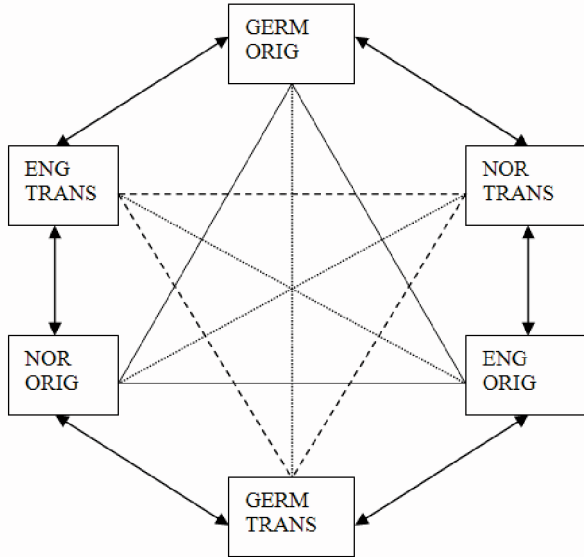


Figure 1. The Oslo Multilingual Corpus (Johansson 2007: 54)

2.2. The meaning of ‘same meaning’

The second issue in the analysis of parallel text is that of equivalence in meaning of the text on different levels. The “notion of equivalence is one of the most basic yet disputed notions in translation practice and studies” (Neubert 2004: 329) and what is to be understood as equivalent, and whether this term is in fact in any way useful, is subject to controversy in translation studies.

Practitioners of contrastive linguistics (e.g. Sternemann 1983: 57,127f.) have been aware of the difference between contextually bound, parole level equivalence found in real translations as opposed to systemic, langue-based equivalence for a long time. In practice, the assumption of equivalence of original and translation often does not present a problem for linguistic research. In the next example, taken from a Russian original, the individual lexical items, the grammatical make-up as well as the utterance meaning can be justly called equivalent across languages in a straightforward way (note that for economy of space, not all examples are fully glossed; here and in some other cases, readers are trusted to follow the argument even if they are not acquainted with the structure of all translations):

- (1) RU *Nikogda ne razgovarivajte s neizvestnymi*
 LT *Niekada nekalbėkite su nepažįstamais*
 EE *Ärge eales laskuge kõnelustesse tundmatutega*
 HR *Nikada ne razgovarajte s neznancima*
 FR *Ne parlez jamais à des inconnus*
 EL *Poté mi miláte mé agnóstous*
 PL *Nigdy nie rozmawiajcie z nieznanymi*
 PL *Nigdy nie rozmawiaj z nieznanymi*
 NL *Spreek nooit met onbekenden*
 DE *Sprechen Sie nie mit Unbekannten*
 IT *Non parlare mai con sconosciuti*
 EN *Never talk with strangers*
 'Never talk with strangers' (Mikhail Bulgakov)²

These utterances differ most conspicuously in respect to politeness and number categories that are not identical across the languages involved and lead to different sets of situations these utterances may be applied to. In the Russian original, as in Lithuanian, Estonian, Croatian, French or Modern Greek, the second person plural serves as a polite form underspecified for number; therefore, the utterance is open to interpretation in regard to these alternatives. The two Polish translations only differ in respect to number: in one translation, a potentially generic second person singular is used, while in the other translation, a plural form is employed. Dutch opts for a neutral second person, while German employs a form that is unambiguously polite, but underspecified in respect to number. Italian uses the negated infinitive which is underspecified in respect to both categories. English, finally, is specified neither for number nor for politeness.

Here, it is the linguistic system that imposes borders on the degree of equivalence. In as far as contrastive or typologically minded linguists are interested in facts of the grammatical system, these differences can be indeed very enlightening. Moreover, even this small example reveals interesting differences in the grammatical system also in other areas, for example in respect to double negation (Slavic languages, Estonian, Lithuanian, French, Italian and Greek) as opposed to single negative elements (German, Dutch, and English). In this case, therefore, the assumption of equivalence that is crucial for the comparison of the linguistic systems based on parallel translations holds.

Example (2) is less straightforward. It involves an apparent lexical mismatch that is more difficult to interpret:

- (2) RU *Odnaždy vesnoju, v čas nebyvalo žarkogo zakata, v Moskve, na Patriaršix prudax, pojavilis' dva graždanina.*
- DE *An einem heißen Frühlingsabend erschienen bei Sonnenuntergang auf dem Patriarchenteichboulevard zwei Männer.*
- SL *V času, ko je vroče pomladansko sonce zahajalo, sta se na bulvarju pri Partriarhijskih ribnikih pokazala dva moža.*
- EN *At the hour of the hot spring sunset two citizens appeared at the Patriarch's Ponds.* (Mikhail Bulgakov)

Independent of the grammatical system and genetic relationship of the languages, the translations, not all given here, fall into two groups: in one of them the Russian *dva graždanina*, literally 'two citizens', is translated with the equivalent of 'two men' (German, Czech, Slovenian, Italian, Hungarian); the other group exhibits translations as 'two citizens' (English, French, Croatian, Slovak, Romanian, Greek, Latvian, Estonian, etc.). The issue here is that the term *citizen* in the Russian original involves connotations that are very hard to render in other languages, where the literal equivalent (such as German *Bürger*) may carry quite different undertones. Since the victims of the Stalinist repressions throughout the 1930s were deprived of their citizen's rights, citizenship during the time of writing of the novel was not something taken for granted, but rather a status that had to do with good conduct as well as with the duties a citizen had towards the state. Moreover, *gradždanin* was the term to designate non-party members; it thus contrasted with *tovarišč* 'comrade'. By using this lexeme in the very first sentence of the novel, Bulgakov sets a specific tone – one that is probably impossible to fully emulate in many other languages (but probably most easily in other languages of the former Soviet Union).

The apparent mismatch of *citizens* and *men* is thus due to the fact that the set of terms that – primarily and with minimal contextual coercion – would seem the closest to Russian *gradždanin* are only partially equivalent. This lack of full equivalence leads to the translation by a hyperonym in some cases, since such a strategy of neutralization is one of the options available to translators to deal with culture-specific concepts and lexical mismatches or gaps in general (see Newmark 1988: 83ff. for an overview).

In any case, both classes of terms used in the translations above always refer to the same referent, namely two men that later in the narrative continue to play a role. This is different in the next example from a Polish original, a novel by Stanisław Lem (partly glossed for clarification):

- (3) PL *Młoda dziewczyna, zapewne sekretarka, wniosła dwie herbaty i postawiła je przed nami.*
 Young girl surely secretary brought-in two teas and set-down them before us
- CZ *Mladá dívka, nepochybně sekretářka, přinesla dvě kávy a postavila je před' nás*
 Young girl surely secretary brought-in two coffees and set-down them before us
- RU *Molodaja devuška, verojatno, sekretarša, vnesla dva stakana čaja i postavila ix pered nami.*
 Young woman probably secretary carried-in two glasses tea-GEN and set-down them before us
- DE [...] *ein junges Mädchen, wohl eine Sekretärin, brachte zwei Glas Tee und stellte sie vor uns hin.*
 ... a young girl, surely a secretary, brought two glass tea and put them before us down
- EN *A young secretary brought two cups of coffee.*
 ‘A young (woman, surely) the secretary, brought two (cups of) tea/coffee (and put them down before us).’ (Stanisław Lem)

The concluding English version is an attempt to render the amount of variation in these translations. Very little is stable across language versions. Partly this is due to a change in granularity; in English, the situation is described in much less detail. Here, the secretary is of unknown gender and the act of serving the beverages is not described in any detail. In the Polish original, in contrast, a young female secretary first brings and then sets down some tea. Most drastically, however, in Polish, Russian and German, she brings tea; in Czech and English, it is coffee.

It is easy to dismiss such a translation on the surface as dealing too liberally with its source. However, it is quite unclear which beverage – tea or coffee – is the more faithful rendition of *herbata* in Czech or English in this context. While in a recipe, the actual substance of the beverage may really be at stake, in the given context, it is the social role of the beverage that is crucial. The novel is largely situated in a bureaucratic world where people in offices sit around all day drinking tea, the typical beverage for this situation at this point of time in Poland. In the Czech setting, the analogous situation would involve people drinking coffee all day, not tea, like in Poland. The same is true for North America, where incessant consumption of tea surely evokes an

association with other English-speaking societies, notably Great Britain, thus introducing a flavor of foreignness not present in the original.

Regardless of what the precise motivation of the translator was in each case, my point should have become clear: ‘coffee’ (or any other beverage, for that matter), may be a very adequate equivalent for ‘tea’ if the social function (or some other level of meaning) of the beverage is what is foregrounded in the text. The issue is, as in the case of the Russian ‘citizen’, again the problem of partial equivalence, albeit with a differential that is even more cultural in nature. As liquids, coffee and tea are probably quite comparable in Poland, the Czech republic or anywhere else; as part of a social practice, they differ.

Linguists have long been aware of such cases of partial equivalence where levels of semantic, pragmatic and cultural meaning are in conflict. In contrast to scholars in translation studies, comparative linguists are often little interested in such cases since they are working on a more general, systemic level where equivalences like these are mostly perceived as noise; consequently, they are often not talked about or dismissed as free translation. This, of course, is due to the focus on treating translated texts merely as a means to the end of language comparison, rather than an interest in translation itself.

However, such cases are important for any linguist working on translated texts. They are testimony to the fact that translation is a creative process of language production like others. There are more than one way to say and conceptualize things, and however things turn out – it could have been differently. In a programmatic essay directed against mechanistic models of translation (and, by the same token, meaning) Haas (1962) writes:

The translator [...] is not changing vehicles of clothing. He is not transferring wine from one bottle to another. Language is no receptacle, and there is nothing to transfer. To produce a likeness is to follow a model’s lines. The language he works in is the translator’s clay.

What part of an utterance is adopted, and what part is changed during translation is thus tied to a plethora of independent factors, among them differences of the linguistic systems, translators’ understanding of the text and his or her role in translation as well as meaning and pragmatic functions on different levels.

Cases of partial equivalence are seldom as clear as the case above; but precisely when they are not obvious they can become a methodological problem; namely, when cases of highly context-dependent translational equivalence are taken to be instances of a more general pattern. However, the knife cuts both

ways. Parallel corpora have the potential to show equivalence in specific contexts beyond those foreseen in grammar books and dictionaries. As always in corpus based research, a mixture of quantitative and qualitative work is called for in assessing the status of individual utterances – with the additional issue of translational equivalence or systemic equivalence in a parallel corpus.

3. What parallel corpora are good for

Just as there are specific problems in the use of parallel corpora, there are also specific advantages. Here, three applications of ParaSol are presented.

3.1. Lexical typology

The first application directly relates to the second problem related above, namely, equivalence in highly specific contexts. While the nature of equivalents may be difficult to assess in highly specific contexts, it is also true that it is difficult to find cross-linguistic data on certain specific contexts. Parallel corpora are extremely helpful if they contain such examples. A case in point is lexical typology, where relatively fine-grained context dependent meanings are compared across a large number of languages. Koptjevskaja-Tamm (2011), for example, uses examples from ParaSol in the study of temperature expressions, among them words such as *lukewarm* that denote an intermediate temperature but only in relation to liquids (glossing retained from the original):

- (4) DE *Dann ließ der Marquis die Ventilatoren anhalten und verbrachte Grenouille in einen Waschraum, wo er in Bädern von lauwarmem Regenwasser mehrere Stunden eingeweicht und schließlich mit Nussölseife aus der Andenstadt Potosi von Kopf bis Fuß gewaschen wurde.*
- EN *Then the marquis had the ventilators stopped and Grenouille brought to a washroom, where he was softened for several hours in baths of lukewarm rainwater and finally waxed from head to toe with nut-oil soap from Potosi in the Andes.*
- SE *...där han fick ligga i blöt flera timmar i bad på*
 where he get:PAST lie in wet several hours in bath on
ljumm-et regn-vatten...
 lukewarm-def.n rain+water

- CZ *kde ho několik hodin namáčeli do*
 where he:acc several hours:GEN make_wet:PAST.3PL in
lázní z vlažné dešťové vody
 bath:GEN with lukewarm:GEN.F rainy:GEN.F water:GEN
- PL *gdzie go przez wiele godzin*
 where he:ACC during many hours
moczono w kąpieli z
 make_wet:PASS.PART.N.SG in bath:LOC with
letniej wody deszczowej
 lukewarm:INSTR.F water:INSTR rainy:INSTR.F
- LT *...kur daug valandų mirkė drungno*
 where many hours:GEN soak:PAST.3SG lukewarm:GEN
lietaus vandens...
 rainy:GEN.M water:GEN

(Patrick Süskind)

Here, translation is thus used to tap into translators knowledge of the languages involved to gather information on very specific questions. Information on restrictions to certain materials, to metaphoric use or connotations are extremely difficult to obtain for many languages, and a parallel corpus that involves many languages such as ParaSol is a valuable instrument for such research. Here, a parallel corpus is used in a qualitative way and as a heuristic device.

3.2. Covert categories: contextual causatives

The next example case also involves specific lexical items that are difficult to find and evaluate in monolingual corpora, however for quite different reasons. They are difficult to find because the category under investigation is not marked in all languages.

Certain causative meanings, called curative in von Waldenfels (forthc.: 29f.), are often not explicitly expressed; for example, in both German and English, when we say that we are *building a house*, this does not necessarily mean that we are construction workers; rather, this is also the standard way to denote the fact that we are *having* it built. Nedjalkov and Silnitsky (1973) call this *non-contact causation* and note that the marking or non-marking of such causation where the causer instigates an action through an intermediary varies across languages. In Russian, for example, one does not explicitly

mark this kind of non-contact causation in a much larger set of situations than in English or German, including, for example, *having somebody's hair cut*, or *having somebody baptized*, viz. a corpus example from a German original:

- (5) DE *Ich war einverstanden, sie taufen zu lassen.*
 I was agreed her-ACC baptize-INF CAUS-INF.
 SK *Súhlasil som, že ich dáme*
 agree-PST AUX:1SG CMP them-ACC CAUS-1PL
pokrstit'.
 baptize-INF
 RU *Ja soglasilsja okrestit' detej.*
 I agree-PST:SG baptize-INF children-ACC
 'I agreed to have the children baptized' (Heinrich Böll)

Here, the German original as well as the Slovak translation involves a causative auxiliary, while in Russian, the fact that the speaker does not baptize the children himself is – in accordance with idiomatic usage – not overtly expressed.

Many questions concerning this construction are unexplored. Is the possibility to be used in such a way a lexical property of certain verbs or a case of regular polysemy? What context parameters are important, what is the role of frequency?

These questions are difficult to approach from a corpus-based perspective. Since these cases are not distinguished by any overt marking they are extremely difficult to find in a monolingual corpus. In a parallel corpus, however, one can use a query on those languages where the phenomenon is marked to find relevant contexts. Figures 2 and 3 show such a query for the relevant auxiliaries in German and Czech. A result sentences is given in (6):

- (6) RU *Kogda utixlo, konferans'e pozdravil Kanavkina, požal emu ruku, predložil otvezti v gorod v mašine domoj, i v ètoj že mašine prikazal komu - to v kulisax zaexat' za tetkoj i prosit' ee požalovat' v ženskij teatr na programmu.*
 EN *When things quieted down, the master of ceremonies congratulated Kanavkin, shook his hand, offered him a ride home to the city in a car, and told someone in the wings to go in that same car to fetch the aunt and ask her kindly to come for the programme at the women's theatre.*

Query interface

Choose primary and aligned language(s), and enter a query. You need to define a query for the primary language (in red). In addition, you may define queries on the aligned languages, which will restrict output accordingly.

Primary language: **Slavonic** (BG, SRA, PLA, RU, HR, SL, SK, RUA, MIK, CZ, US, UK, SR, PL, BY) **Germanic** (NL, EN, DE, RO) **Romance** (FR, ES, IT, PT, RO) **Baltic** (LV, LT) **Others** (EO, EL, HU)

Aligned languages: **Slavonic** (BG, SRA, PLA, RU, HR, SL, SK, RUA, MIK, CZ, US, UK, SR, PL, BY) **Germanic** (NL, EN, DE, RO) **Romance** (FR, ES, IT, PT, RO) **Baltic** (LV, LT) **Others** (EO, EL, HU)

All texts Only texts available in all languages

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German [lemma="lassen"]

Russian [lemma="d(á)(va)?t(nech(áv)?at"]

Czech [lemma="dá(va)?t(nech(áv)?at"]

Slovak

Serbian a

Macedonian

Bulgarian

Ukrainian

Belorussian

Figure 2. A query for causative auxiliaries in Czech and German.

379 hits overall.
70 hits in corpus boellclown.

	sk	ru	cz
245 Seldem Marie weg ist, bin ich manchmal aus dem Rhythmus geraten, habe Hotel und Bahnhof miteinander verwechselt, nervös an der Portierloge nach meiner Fahrkarte gesucht oder den Beamten an der Sperre nach meiner Zimmernummer gefragt, irgendwem das Schicksal heißen mag, ließ mir wohl meinen Beruf und meine Situation in Erinnerung bringen.	Márin odhodl mi tento rytmus zavše naruši, takže som si splotiel hotel so stanicou, v hoteli na vrátnici som nervózne zhládaval lístok a na stanici u kontrolóra lístkov som sa vyzvedal na číslo svojej izby; čosi, čo možno nazvať osudom, pripomenulo mi moje povolanie a polohenie, v ktorom som sa ocitol.	Но с тех пор как ушла Мария, я порой выбиваюсь из привычного ритма и путаю гостиницы с вокзалами:	Od té doby, co je Marie pryč, jsem ko rytmu, spleti jsem si hotel s nádražím. Nějaký jízdenku v hotelové recepci a už jsem se ptal na číslo svého pokoje, mi situace mi připomínaly nějaký cosí, že
1594 Ich ließ den christlichen Herrn Kostert da hinten am anderen Ende der Leitung sitzen, um zu bekommen, war er zu k zum Selbstmord, und schickte mich wieder auf einer Agent, als ganz nett oberher bezeichnet, und das würde fehlenden zweieinzwanzig zu lassen.	Nechal som toho kresťanského pána Kosterta, nech sa tam na druhom konci. Кипящую воду, думал я о вилле, которую построил себе Цюпфнер.	Ущипа па пипа а ину сией. яsem při tom na dům, který si dal Ziipfner postavit.	Nechal jsem křesťanského pana Kostert tam pošť; aby se mous ale na soucit se sebe : echat ho, at' se o sa pokojí, "vykřikl jsem domá.
1903 Es war viel besser, in Geviessen herumpopeln zu lassen.	47398 Es war mir peinlich, und mir fiel ein, daß ich Marie noch nie Blumen hatte schicken lassen.	Мне стало страшно неприятно, и я вспомнил, что никогда не дарил Марии цветов.	hal chlastu, dostanu nerer, můj agent, o průměrem", a to by nějakých dvaadvacet i
12768 Schließlich stand Mal Badezimmer, während ich weiterrachte und an die sich hatte in die Gasse rollen	14226 Einen Augenblick lani aufzustehen, die Schublad Wäsche anzusehen, aber dem	- Bylo mi trapně a napadlo mě, že jsem ještě nikdy nedal Marii poslat květiny.	ale a odešla do koup i posteli, kouřil jsem aré jsem nechal skut
19695 Ich hätte den Mädchen gern zugewinkt, ließ es aber.	Rád by som bol dievčatám zskýval, ale nechal som to tak.	Мне хотелось помахать девушкам, но я не стал этого делать.	Byl bych těm děvčatům rád zamával, z být.
19995 Oh, sagte ich, ich würde so gern den Major einmal „G“, vyzveťoval som, tak rád by som zase videl wiederssehen, der bei uns einquartiert war und Frau Wieneken erschēssen lassen wollte.	majoro, čo bol u nás v byte a chcel dať odstrelit' pani Wienekenovú.	- Да потону, - сказал я, - что мне нестерпек встретить с стен майорон, которого поселили к нам во время войны и который собирался расстрелять немашу Винекен.	"Ale, " řekl jsem, " zase bych jednu majora, co byl u nás ubytovaný a chtěl Wienekenovou.
23721 Ihr metaphysischer Schrecken bezog sich einzig und JeJ metafyzická hrůza pramenila len z toho, že som sa		Ее "страх за свою душу" возник только из - за моего нежелание соизмеряться с ней зловещим близким и	Její metafyzická hrůza se vztahovala je

Figure 3. Results of the query with instances of unmarked causation in Russian.

- RU ...*predložil otvezti v gorod v mašine domoj...*
 offered drive-INF in city-ACC in car-LOC home
- DE ...*sagte, er wolle ihn mit dem Auto nach*
 said he wants-SUBJ:3SG him-ACC with the car to
Hause bringen lassen...
 home bring-INF CAUS-INF
- CZ ...*navrhl, že ho dá odvézt domů.*
 proposed COMP him-ACC CAUS-3SG bring-INF home
- NL ...*bood aan hem per auto naar de stad te laten brengen...*
 offered him by car to the city to CAUS bring-INF
- SL ...*mu ponudil, da ga odpeljejo z avtom*
 him proposed COMP him-ACC bring-3PL with car-INSTR
domov v mesto.
 home in city-ACC
- IT ...*propose di portarlo in macchina a casa sua in città...*
 proposed to bring-him in car to house his into city
- HR ...*ponudi mu da ga odveze kolima kući...*
 proposed him COMP him-ACC bring-3SG by-car home
- LV ...*pieāvājās aizvest mājās ar mašīnu*
 offered bring-INF home by car
- EN *offered him a ride home to the city in a car* (Mikhail Bulgakov)

Here, the German, Dutch, Czech and Slovak versions use a causative auxiliary to signal causation, while Russian, as well as a number of other languages, do not mark causation at all. Other languages make use of yet other means to clarify the situation; for example, the phrase *in a car* rather than *in his car* makes things quite unambiguous in English. Most Slavic versions go with Russian in not marking this fact, which could, of course, also be due to interference from the original. In any case it is highly significant that many translators add clarification showing that in Russian the phrase in question involves causation without this being expressed explicitly. This attestation of a covert curative causative, by itself, is indeed very difficult to spot; it becomes conspicuous in the light of its translations.

In this way, translations in parallel corpora can be used as rich and subtle semantic *annotation* that affords corpus queries that are very difficult to do in monolingual corpora. In this way translator's strategies, as far as they can be reconstructed, shed light on both source and target language and text.

3.3. Aggregating across translations

The first two applications presented above are of a qualitative nature and involve careful inspection of each corpus example. A prime difficulty, however, is understanding how indicative of some general state of affairs individual corpus attestations are. One way to investigate this is to aggregate over a lot of data – both in the sense of taking many contexts into account, and in the sense of using many different translations. On a general level, such an aggregation over many languages is useful for understanding what is cross-linguistically expected in a certain domain and what is rather exceptional. The following application involves such an investigation into the use of verbal aspect across and beyond Slavic.

The study, reported in more detail in von Waldenfels (2012), concerns the use of aspect in the imperative in 14 translations of the Russian novel *Master i Margarita* by Mikhail Bulgakov and takes variation in the use of this category both across Slavic and in comparison to Modern Greek into focus.

In this approach, all contexts that involve an imperative in the original are examined across language versions and converted to a table. Each context is represented as a column; language versions form the rows of the table. Each cell thus represents a specific context in a specific translation. These cells are then assigned the value *perfective*, *imperfective* or *non-assigned*, depending on the aspect of the imperative form and whether such a form was used.

Figure 3 illustrates the data matrix with a small excerpt. The following is an example of a single context in several translations; each such translation is represented in a cell of the table:

(7)	[...] <i>ty kogda-libo govoril čto-nibud' o velikom kesare?</i> ‘[...] <i>did you ever say anything about the great Caesar?</i> ’	
	RU <i>Otvečaj!</i>	(imperfective)
	PL <i>Odpowiadaj!</i>	(imperfective)
	BG <i>Otgovarjaj!</i>	(imperfective)
	SK <i>Odpovedz!</i>	(perfective)
	CZ <i>Odpověz!</i>	(perfective)
	SL <i>Odgovori!</i>	(perfective)
	EL <i>Apántise!</i>	(perfective)
	‘Answer!’	(Mikhail Bulgakov)

'Russian'	p	p	i	i	i	p	p	p	p	i	i	i	p	i	i	i	i
'Belarusian'	i	i	i	i	i	p	p	p	p	i	i	i	p	i	i	i	i
'Ukrainian'	i	p	-	i	i	p	p	-	p	i	i	i	p	i	i	i	i
'Bulgarian'	i	p	i	-	i	i	p	p	p	i	-	p	p	p	p	p	-
'Macedonian'	p	p	i	p	i	p	p	p	-	p	i	i	p	p	p	p	i
'Serbian'	i	p	i	-	i	p	i	p	-	p	i	i	i	p	p	p	i
'Serbian/2'	-	p	i	p	i	p	p	p	p	i	i	i	-	-	p	p	i
'Croatian'	-	p	i	p	i	p	p	p	p	p	i	i	i	p	p	p	i
'Slovenian'	p	p	i	p	p	p	i	i	-	p	p	p	i	p	p	p	-
'Czech'	i	p	-	i	i	i	i	p	i	p	p	p	p	p	p	p	p
'Slovak'	i	-	-	-	p	p	i	-	p	i	p	i	-	p	p	p	p
'Polish'	i	i	p	-	i	i	p	p	p	-	p	i	i	i	p	p	i
'Polish/2'	i	i	i	-	i	i	p	p	p	i	p	i	p	-	p	p	i

Figure 4. An excerpt of the data matrix representing contexts (columns) and translations (rows).

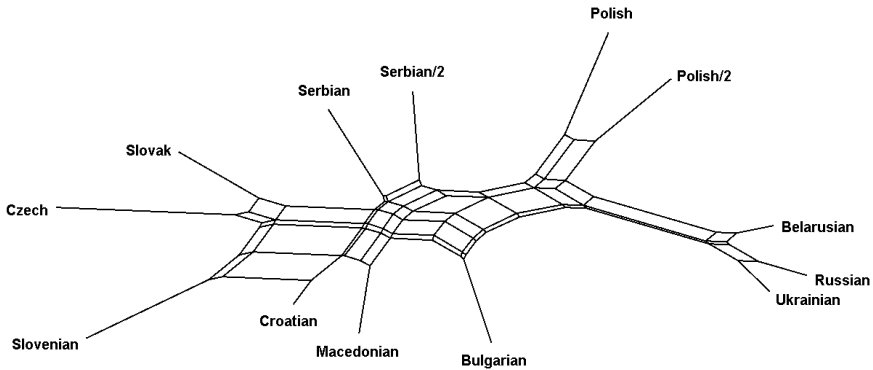


Figure 5. NeighborNet graph of aspect-based distances of 13 doculects.

The set of data where aspect values differ is then transformed into a distance matrix using Hamming distance as a metric and aggregated in a Neighbor Net graph (Huson and Bryant 2006) as shown in Figure 4. The Neighbor Net graph represents an abstraction over all contexts; it shows, among others, that there is a strong Western and a strong Eastern group that differ most strongly in aspect usage. This confirms earlier work based on questionnaire data (Benacchio 2010) as well as Dickey's (2000) broad division of Slavic aspect systems into an Eastern and a Western Group; see von Waldenfels (2012) for more details.

The neighbor net graph only relates to cases where the aspect of the imperative is not identical across translations. However, a majority of contexts

had consistent aspect values across the Slavic translations. The inclusion of Greek, not shown in Figure 5, additionally revealed that, as a whole, the variation in aspect assignment across the Slavic translations is much smaller than in relation to the non-Slavic Greek translation. This shows that the aspect category in Greek is principally different from its Slavic counterpart in this environment.

This kind of finding is very difficult to achieve with monolingual, comparative corpora, because aspect functions in the Slavic imperative are pragmatic in nature and sensitive to complex and subtle context parameters. The prime problem of obtaining comparable data for the cross-linguistic study of such functions lies in keeping these context parameters fixed both across languages. To a certain degree, this can be achieved by using parallel texts.

3.4. Concluding remarks

It should be emphasized that parallel corpora are but one possible data source for this kind of work. Dickey's (2000) investigation into cross-Slavic aspect relies on a wide range of sources, only one of them being translated texts. Benacchio (2010) uses a questionnaire in her research into the use of aspect in the imperative.

Parallel texts are similar to questionnaires in that they represent speakers' judgements on specific, comparable linguistic tasks. However, parallel corpora are by their nature less focussed on researchers' interests than questionnaires are. This cuts both ways: on the one hand, parallel corpora only yield data on whatever happens to be frequent in the texts used, and their content cannot be controlled; like all corpora, they cannot provide negative evidence. Questionnaires, in contrast, allow explicit testing of certain hypotheses, including their falsification.

On the other hand, translations can be used in a data-driven, bottom-up manner that is much less biased by the researcher's initial hypotheses than questionnaires. Parallel corpora thus contribute valuable additional evidence that is sufficiently different from questionnaires to provide powerful confirming or conflicting evidence.

Another point to stress is that data aggregation using quantitative methods exemplified above is just one of the methods that can be applied in the analysis of multilingual parallel data. Barentsen (2008) uses the Amsterdam Slavic Parallel Aligned Corpus (ASPAC³), another large corpus concentrating on Slavic languages, in a fine-grained investigation into the cross-Slavic ex-

pression of repeated consecutive events in the past. Barentsen's method does not rest on statistical procedures, but on careful examination of the individual attestations in the corpus; accordingly, his interpretation of the data is very rich, surely richer than can be arrived at using quantitative methods alone. In paying more attention to frequent than to rare contexts, however, Barentsen's work also has an implicit quantitative component. It seems clear that these two perspectives on the use of parallel corpus data – quantitative and qualitative – do not exclude, but rather supplement each other.

4. Conclusions

Two main problems of using parallel texts in language comparison were focused on in this paper: (a) the problem of specific characteristics of translated language that make it difficult to generalize from translated texts to other varieties of a language, and (b) the issue of varying degrees of equivalence in translation that may lead to difficulties if not properly taken into account in the analysis.

The first problem can be dealt with by taking recourse to the comparison with non-translated texts, if available. This problem is an instance of a more general problem of almost any data source in linguistics, namely that many phenomena differ in distribution depending on text, language variety and other factors.

The second issue is more specific. Translations have the advantage and disadvantage of being based on complex and inherently non-deterministic conceptualizations of source and target texts in a rich context. These conceptualizations are never completely fixed; this makes uncritical use of translations highly problematic. A number of translations that may lead astray if taken as testimony of straightforward equivalence across languages were adduced in Section 2: for example, one should not take Example (2) to show that the Czech word for 'coffee' generally means the same as the Polish word for 'tea'. Parallel corpora are in this sense unreliable.

However, this is only one side of the coin. Translators, as other language users, normally agree in the understanding of the situation to considerable degree and in many respects; the complex conceptualizations of the source text that find expression in the target text are therefore exactly what make parallel text such a valuable source for linguistic research.

The three sample applications that were presented in Section 3 all tap into translator's work and crucially rely on it. The first application concerned gathering information on the expression of certain meanings in specific contexts

that may not be covered in reference works; in a cross-linguistic lexical study, aligned translations can be extremely helpful as a heuristic device.

The second application concerned finding instances of a category expressed in some languages and left implicit in others. In order to find instances of non-expression of some category, translation as testimony of a translator's interpretation of the source text can be used. Here, translation is used as a paraphrase that is potentially more explicit than the source text itself.

In the last case study, a more quantitative approach was described where translation data is aggregated to describe divergence and convergence across closely related languages in the use of a highly context-dependent category.

Neither problems nor possibilities of a corpus such as *ParaSol* could be exhaustively described in the present article. The general point made in this paper is that parallel texts, especially if presented in an aligned translation corpus such as *ParaSol*, are a data type that offers unique possibilities that are intrinsically connected to specific potential pitfalls. Both have to do with the nature of translated texts that do not arise as the result of mechanistic mappings of a text into another language, but rather as the effect of the creative linguistic activity of individual bilingual speakers.

Notes

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2. The following abbreviations are used in this paper: BG Bulgarian, CZ Czech, DE German, EE Estonian, EL Modern Greek, EN English, ES Spanish, FR French, HR Croatian, IT Italian, LT Lithuanian, LV Latvian, MK Macedonian, NL Dutch, PL Polish, RU Russian, SE Swedish, SK Slovak, SL Slovene, SR Serbian. Examples are taken from the following works and their translations: Mikhail Bulgakov, *Master i Margarita*; Patrick Süskind, *Das Parfum*; Stanisław Lem, *Pamiętnik znaleziony w wannie*; Heinrich Böll, *Bekenntnisse eines Clowns*. For bibliographic details, please consult the web sites at parasol.unibe.ch and www-korpus.uni-r.de/ParaSol.
3. More information on ASPAC can be found here: <http://home.medewerker.uva.nl/a.a.barentsen/page1.html>

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Part III: Dynamic language

Historical text analysis: Underlying parameters and methodological procedures

Beatrix Busse

1. Introduction

A major branch of historical linguistics today utilises functionally and contextually oriented approaches which explore linguistic patterns of usage of past stages of a language. These, recently covered under the heading of “modern historical linguistics” (Mair 2006), tell new stories about socio-pragmatic or even cognitive linguistic phenomena that have changed or remained stable in the course of a language’s history. Ideally, these findings are bridged with the more classic historical linguistic areas, such as historical phonology, historical morphology or historical syntax. More specifically, both the fields of historical pragmatics (Jacobs and Jucker 1995) and historical sociolinguistics (Nevalainen and Raumolin-Brunberg 2004) have made significant contributions to explaining socio-pragmatic features of language use in the past. They have furthered our understanding of research methods and data analysis and therefore have also revealed their potentials for the analysis of contemporary language data.

Within this framework the role of historical corpus-analysis, the refinement of corpus tools and search procedures as well as the availability of more and easily accessible historical data have lead diachronic text mining into new and highly delicate analytical directions, which even allow the analyst to systematically investigate explicitly discoursal phenomena and aspects of style (Busse 2010) on a much broader (and) diachronic scale than used to be possible, for example, twenty years ago (Taavitsainen and Fitzmaurice 2007, Taavitsainen and Jucker 2007). In addition, these historical pragmatic and historical sociolinguistic approaches have been better at considering literary sources to be indispensable for the study of older stages of a language (Busse 2010) than linguistic approaches which deal with Present-day language data; and this is not only because – due to the non-existence of spoken records for historical periods – they have been forced to do so. As such, they have followed Sinclair (2004) who does not marginalise the study of literature for the analysis of linguistic features. On the contrary, he stresses: “no systematic apparatus can claim to describe a language if it does not embrace the literature also; and not as a freakish devel-

opment, but as a natural specialisation of categories which are required in other parts of the descriptive system” (Sinclair 2004: 51).

Due to these fruitful trends new complex challenges have evolved and need to be addressed. They include, for example, a re-discussion of the relationship between a function-to-form and a form-to-function mapping (Jacobs and Jucker 1995) or the question of how much context is needed in order to infer socio-pragmatic meanings in historical texts, or the relationship between low and high-frequency items or the question of whether we actually need quantitative procedures to trace historical-pragmatic change, or the dimensions of semantic-pragmatic change on a longer diachronic scale.

This paper takes stock and describes the methodological and theoretical advantages of including a recent modern historical linguistic approach to the analysis of historical data. As such, this paper outlines its major pillars and its basic toolkit. In addition, it illustrates where both methodologies and text mining need to be pushed further and be critically discussed. To illustrate why and how modern historical linguistic approaches win accolades, the investigation of stance adverbials in the history of English, especially in Early Modern English (ca. 1500-1700), serves as a case study. The aim is to illustrate how to identify a set of possible stance adverbials in Early Modern English, how to determine their syntactic realisations, semantic categories, quantitative distribution and pragmatic functions as well as how to systematically investigate a phenomenon as discursual as stance adverbials in the history of English.

2. Historical expressions of stance

Stance adverbials indicate a speaker’s attitude or opinion. They can be defined as sentence modifiers with sentential scope, which are not grammatically required but may be pragmatically desired and are speaker- and/or hearer-oriented. Shakespeare examples are: “Here’s a change **indeed!**” (*Oth.* 4.2.106¹, emphasis mine), “And **indeed** such a fellow, **to say precisely**, were not for the court” (*AWW* 2.2.12, emphasis mine), or, from the Paston letters, “for **by my trowthe** they haue as well deseruyd it as eny men +tat euer bare lyue” (PASTON, I, 546.180.5514, PCEEC, emphasis mine). The position stance adverbials can take on in the clause is flexible amongst initial, medial or final position, and they can be realised not only by adverbs, but also by a variety of other syntactic structures, such as propositional phrases, finite clauses, non-finite clauses or noun phrases.

Biber et al. (1999: 853-854) label the examples listed above stance adverbials, which may simultaneously function as an indication of the speakers' comment on what they are saying (the content of the message) and how they are saying it (the style). Biber et al. (1999) also set up a semantic classification of stance adverbials. Following their analyses of stance adverbials in Present-day English conversation, fiction, newspapers and academic English, they establish three broad categories of stance adverbials. These are (a) epistemic, (b) attitudinal, and (c) style adverbials. Epistemic stance adverbials enhance the truth value of the proposition and they can be further subdivided into (i) doubt and certainty stance adverbials, (ii) actuality and reality stance adverbials, (iii) source of knowledge stance adverbials, (iv) stance adverbials indicating limitation, (v) viewpoint and perspective stance adverbials, and (vi) stance adverbials indicating imprecision. Examples of epistemic stance adverbials are *indeed* (doubt and certainty) or *in regard of* (viewpoint) (see also Lenker 2007: 82-83). Attitudinal stance adverbials express the speaker's attitude towards an evaluation, as in *haply*, for example. Stance adverbials of style convey a speaker's style and often clarify how the speaker is speaking or how the utterance should be understood. They are seen as explicitly metalinguistic adverbials. One example would be *to say precisely*, quoted in the example above.

According to Biber et al. (1999: 969), grammatical stance devices fulfil two distinct roles simultaneously, that of presenting the stance, and that of realising a proposition that is framed by the stance. For example, in Shakespeare's "And indeed such a fellow, to say precisely, were not for the court" (*AWW* 2.2.12), *to say precisely* frames the proposition "were not for the court" and underlines, in initial position the truth of what is claimed in the proposition. What this example also illustrates is that the boundaries between the categories of stance adverbials may be fuzzy because although *to say precisely* is, semantically speaking, metalinguistic because it defines how something is said, it is also epistemic in that it strengthens the truth value of the utterance.

3. Methods of historical text analysis

Historical text analysis in general and the analysis of stance adverbials in particular demand a methodological plurality (Busse 2010) in order to account for both the general methodological difficulties of dealing with historical texts and, more specifically, in order to be able to capture the complex discursive import of pragma-linguistic phenomena such as stance ad-

verbials, as well as their functional and stylistic development over time. General methodological difficulties evolve around such aspects as diverse as choice of copy text, spelling variants, wealth or scarcity of material for a particular period, text production and reception or the analyst functioning as a mediator between past and present (Taavitsainen and Fitzmaurice 2007).

Moreover, the retrieval of forms in historical corpora, for example, – which, in historical pragmatic terms, can be regarded as a form-to-function mapping (Jacobs and Jucker 1995) and would be needed to make reliable quantitative statements – can only be successfully performed if the analyst knows the forms he or she is looking for. Therefore, for stance adverbials it is necessary to know how they have been realised in the past. But stance adverbials carry complex micro-contextual features and are in need of a pragma-philological interpretation. The fact that stance adverbials can be found in a variety of formal realisations, ranging from simple adverbs to comment clauses, makes their retrieval even more difficult. For comment clauses, Brinton (2008) has impressively analysed not only the rise of a number of their linguistic realisations and their multifunctionality during the Early Modern English period, but also their increasing frequency of occurrence. The focus of this paper will be on stance adverbials other than comment clauses because it seems necessary to identify them first before they can be fruitfully compared with comment clauses.

It is not possible to simply follow one's Present-day English intuitions or search for a Present-day set of stance adverbials in a historical text. The meanings and functions of Present-day stance adverbials are likely to have undergone a rapid process of change and/or of grammaticalisation (Hopper and Traugott 2003) or subjectification (Traugott 2003). Hence, it cannot be immediately assumed that forms of stance adverbials used today are relevant to, for example, Shakespeare's English: in Shakespeare's time *apparently* still refers to the manner in which something is done, that is, it does not function as an epistemic stance adverbial of source of knowledge, as can be seen in the finally positioned "If he should scorn me so apparently" (*Err.* 4.1.78) from Shakespeare's *The Comedy of Errors*.

Furthermore, forms may also oscillate – or show a semantic layering (Hopper and Traugott 2003) – between their source and the grammaticalised meaning in a particular period under investigation. These have to be carefully discriminated against one another. For example, during the Early Modern English period *in regard of* can refer to the esteem in which somebody is held. But during that period it moves towards functioning as a stance adverbial, restricting a topic, which makes it not always easy to determine functional import. This multifunctionality or semantic layering can

be exemplified by: “I thank my liege that in regard of me / He shortens four years of my son’s exile” (*R2* 1.3.216-217) from Shakespeare’s *Richard The Second*, which is ambiguous between both a stance adverbial restricting the topic and a reference to the esteem in which the speaker is held. Another example is the frequently used stance adverbial *indeed*. Although it was already grammaticalised to function as a stance adverbial during Shakespeare’s time (Traugott and Dasher 2002: 159-165), we can find cases in which the adverb both indicates sincerity as a stance adverbial and refers back to its source meaning denoting actuality, and therefore does not function as a stance adverbial. This is visible in the following example from Shakespeare’s *Antony and Cleopatra* in which Cleopatra and the eunuch play on the former and the grammaticalised/subjectified meaning of *indeed* and *in deed* in *Ant.* 1.4.14.

- Cleo. [...] Hast thou affections?
 Mar. Yes, gracious madam.
 Cleo. *Indeed?*
 Mar. Not *in deed*, madam, for I can do nothing
 But what *indeed* is honest to be done;
 Yet, have I fierce affections, and think
 What Venus did with Mars. (*Ant.* 1.4.8-19, emphasis mine)

Cleopatra, who is moody because of Antony’s departure, provokes the eunuch, whose function usually is to entertain the queen, by asking him about his “affections” (*Ant.* 1.4.7), that is, his sexual desires. The eunuch’s positive and simple answer is taken up by Cleopatra as an incentive to use *indeed* jokingly and lasciviously. As such, *indeed* has the meaning of *truly*. The eunuch understands the sexual implications of her questions, takes them up as well, but reverses them to “not in deed” (*Ant.* 1.4.8). He redresses his answer with a rejecting, but polite affirmative reply, using the polite form of address, *madam*. Also, the polite and decorous commonplace “for I can do nothing / But what indeed is honest to be done” (*Ant.* 1.4.8-9) fulfils this role. Here *indeed* strengthens the adjective *honest*. This discussion illustrates that a corpus-based retrieval of forms is also in need of an individual qualitative analysis.

The preceding paragraphs have only highlighted some of the challenges the historical linguist or pragmatician encounters when systematically investigating a discoursal phenomenon such as stance adverbials. The following procedures suggested for historical text analysis in general and for the retrieval and analysis of stance adverbials in particular account for a transparent and systematic research framework. This informed investigation

guarantees that both our analyses as well as our interpretations are valid (Taavitsainen and Fitzmaurice 2007).

To retrieve a set of stance adverbials, one initial procedure consults investigations of stance adverbials which focus on Present-day English (e.g. Biber et al. 1999), which focus on historical periods of the English language, such as Biber (2004) or Fitzmaurice (2004), and which represent case studies of particular historical forms, such as Lenker's (2003, 2007). For reasons illustrated above it is necessary to draw on studies which cover phenomena of grammaticalisation (Traugott 1995, Traugott and Dasher 2002, Traugott 2003, Brinton and Traugott 2005, Lenker 2003, 2007).

The other procedure goes back in time to determine which stance adverbials occur in Early Modern English and are not part of the Present-day English set. These include samples such as *powerfully*, *assuredly* or constructions beginning with the preposition *by*. As an exemplary corpus of Early Modern English and as a starting point to retrieve a set of stance adverbials, the analysis of stance adverbials in Early Modern English initially focuses on Shakespeare's plays allowing "the possibility of total accountability of linguistic features" (Svartvick 1992: 9) from one author. Additionally, I also suggest a close reading and analysis of a selected set of plays (generally speaking, I would also suggest a close reading of a sample of texts from specific corpora). I have studied two of Shakespeare's comedies and tragedies – *A Midsummer Night's Dream*, *Much Ado About Nothing*, *King Lear*, and *Othello* – in order to find additional forms which can then be searched for in the complete corpus. Furthermore, it is also necessary to consult contemporary sources as well as those sources that have been published as dictionaries of Shakespeare. For example, classic critical work on the language of Shakespeare consists of Spevack's (1968-1980) concordances, Spevack's (1993) *A Shakespeare Thesaurus* or Onions (1996) and Schmidt and Sarrazin ([1874/75] 1962). Early Modern English dictionaries (and for other periods, other dictionaries, such as the *Middle English Dictionary*, for example), now electronically compiled in the *Lexicons of Early Modern English (LEME)* by Ian Lancashire (2008) as well as the *Oxford English Dictionary (OED)* are of crucial importance for the identification of stance adverbials and their functions. All of these serve as important lexicographical aid to determine meaning. For example, a *LEME* search of *indeed* lists under Thomas Thomas's (1587) dictionary *Dictionarium Linguae Latinae at Anglicanae* the additional stance adverbials *clearly*, *manifestly*, *plainly*, *without faile*, which show how this search may provide additional candidates of stance adverbials.

For the English language, another source is the *Historical Thesaurus of the Oxford English Dictionary* (Kay, Roberts, Samuels and Wotherspoon

2009), which is now electronically available and can be used for a variety of search procedures.² It divides the senses of all (!) *OED* lemmas into a network of semantic categories, which means that for searches of stance adverbials we can use the *Thesaurus* to find generally related terms and related terms of the same period. Also, it is possible to search not only for particular forms and how they are semantically categorised, but also for particular semantic categories. For example, semantic categories that may be of interest to the search of stance adverbials are the following:

- (1) conformity with what is known, – *truth* , – *in truth* , – truthfulness, veracity
- (2) faithfulness or trustworthiness > fidelity or loyalty > *troth*
- (3) foundation in fact, validity – *real*, *really* and *truly*, *soothfast*

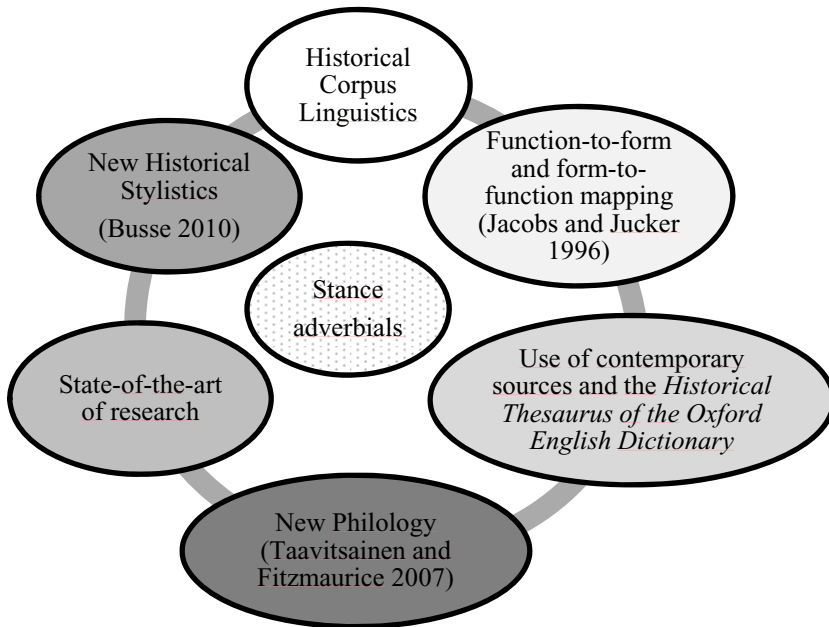


Diagram 1. Pillars of historical text mining

This methodological plurality should be further enhanced by corpus linguistic methodology. With an established set of forms it is possible to systematically search a corpus in order to find out how the forms are used in Shakespeare's plays and other historical corpora. Due to the difficulties resulting from grammaticalisation and semantic layering, a corpus-based approach is particularly helpful here because it shows patterns of usage from which we can infer contemporary meanings. In this study, the search

of stance adverbials in the Shakespeare corpus will be enhanced by a corpus-based investigation of a selected number of stance adverbials in other Early Modern English corpora in order to make some genre-specific interpretations and to say something about frequency of usage. However, following my new historical stylistic basis (Busse 2010), I try to avoid number crunching for its own sake and an exclusive interest in high frequency items because functional import and stylistic meanings are established in interplay of low and high frequency items and qualitative as well as quantitative considerations. Diagram 1 should serve as a summary of what it takes to perform functionally oriented historical text analysis.

4. Stance adverbials in Shakespeare

4.1. Preliminaries

The Shakespeare corpus comprises 38 plays (including *The Reign of King Edward III*). The number of words for his dramatic works amount to 857,705.

Table 1. Number of words in the Shakespearean comedies, romances, histories and tragedies

genre	number of words
comedies	261,623
tragedies	227,977
romances	109,870
histories	258,235

Table 1 shows the number of words in the respective sub-genres of the Shakespeare corpus. The texts used are based on the modern *The Riverside Shakespeare* (Evans et al. 1972, 1997) edition. The assignment of plays to genres is a controversial issue. Here, the categorisation of the plays into genres is a modern one and also follows *The Riverside Shakespeare* (Evans et al. 1997) and draws on the *Shakespeare Database* (Neuhaus forthcoming),³ a full lemmatization of Shakespeare's work.

Outside Shakespeare, the *by my* construction and *indeed* are compared with their occurrences in *A Corpus of English Dialogues 1560-1760* (CED), which is a 1,4 million word corpus of Early Modern English speech-related text, which are divided into "authentic dialogue", such as witness depositions and trials, and "constructed dialogue", such as excerpts from drama comedy, prose fiction and didactic works. The results from

Shakespeare are also compared with their occurrences in a letter corpus, the *Parsed Corpus of Early English Correspondence (PCEEC)* (1410-1695), which contains 2,2 million words. To search these texts *Wordsmith Tools* (Scott 2008) have been used with attention to spelling variants. Quantitative figures are calculated by means of percentages, relative frequencies and frequency per 10,000 words.

4.2. Quantitative findings

The set of stance adverbials so far identified in Shakespeare's plays consists of 112 types. These are realised by 2248 tokens, which amount to 26 tokens per 10,000 words. Although many of the individual types of stance adverbials occur only once, the number of tokens per 10,000 words is substantial. As Figure 1 illustrates, stance adverbials are most frequent in Shakespeare's comedies and less frequent in the romances, the tragedies and the history plays.

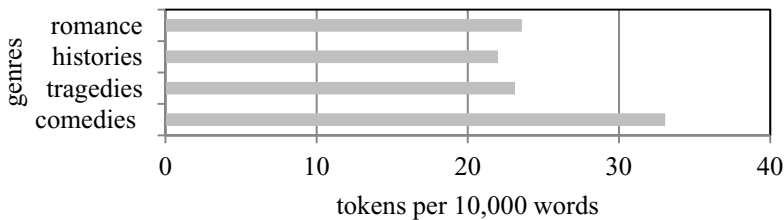


Figure 1. Distribution of stance adverbials in the Shakespeare plays

Generally speaking, the possible assumption that comedies contain more prose than verse and therefore also more stance adverbials cannot be verified, because, in the comedies, 153,370 words occur in verse and 108,262 occur in prose (Spevack 1968-1980: volume 1). In the comedies, we also find more types of stance adverbials than, for example, in the tragedies: there are 83 types of stance adverbials in the comedies (realised by 865 tokens) and 68 types in the tragedies (realised by 527 tokens), even though, as Table 2 illustrates, the list of the most frequently realised types is somewhat similar.

Table 2. Most frequently occurring stance adverbials in Shakespeare's comedies and tragedies

position	comedies		tragedies	
	stance adverbial	raw freq.	stance adverbial	raw freq.
1	<i>indeed</i>	169	<i>indeed</i>	132
2	<i>truly</i>	74	<i>truly</i>	41
3	<i>in faith</i>	55	<i>faith</i>	38
4	<i>faith</i>	47	<i>at all</i>	21
5	<i>by my troth</i>	38	<i>by heaven</i>	20
6	<i>by gar</i>	27	<i>in faith</i>	16
7	<i>at all</i>	21	<i>upon my</i>	13
8	<i>perhaps</i>	20	<i>perforce</i>	13
9	<i>perchance</i>	19	<i>perchance</i>	13
10	<i>surely</i>	18	<i>perhaps</i>	12

Therefore, it is not through the most frequently occurring types that this kind of creativity is realised – because these are almost similar for both genres – but through those types that are only realised by ten or fewer tokens, such as *troth* or *apparently*. A general investigation of the ten most frequent stance adverbials and the *by my* construction shows in Table 3 that these stance adverbials also occur more frequently in verse than in prose. The figures are given in relative frequencies.⁴ Yet, as can be seen in Table 3, in the comedies, the result is reversed because these top ten stance adverbials occur more frequently in the prose sections than in those passages written in verse. Therefore, the high proliferation of stance adverbials in the comedies *Ado*, *Wiv.* and *TN* (illustrated in Table 4) may be attributed to the fact that these three plays also contain more passages in prose than in verse (see Spevack 1968-1980: volume 1) and that, therefore, the rapid exchange and sometimes shorter turns might result in a higher use of stance adverbials. However, this is not the case for the tragedies in general and the tragedy *Oth.* in particular, which contains more passages in verse than in prose.

Table 3. The verse-prose and generic distribution of the ten most frequent stance adverbials and the *by my* construction in the Shakespeare corpus (raw frequencies and relative frequencies which are computed according to the total number of words in each genre)

	verse (raw freq.)	verse (rel. freq.)	prose (raw freq.)	prose (rel. freq.)
comedies	194	0,074	348	0,133
histories	238	0,092	128	0,049
romance	80	0,072	43	0,039
tragedies	216	0,094	128	0,056

Table 4. Distribution of stance adverbials in the respective Shakespeare plays

	play	date	genre	raw freq.	number of words in the play	rel. freq.
1	<i>Ado.</i>	1598	comedy	117	20768	0,56
2	<i>Wiv.</i>	1597	comedy	101	21119	0,48
3	<i>Oth.</i>	1604	tragedy	109	25887	0,42
4	<i>TN</i>	1601	comedy	80	19401	0,41
5	<i>2H4</i>	1598	history	100	25706	0,39

4.3. Semantic distribution of stance adverbials in Shakespeare’s plays

In Shakespeare’s plays, epistemic stance adverbials make up almost 97%, Attitudinal stance adverbials amount to 1,91% and style adverbials to 1,42%. The forms illustrated in Table 5 show a selection of stance adverbials assigned to each of the categories.

Table 5. Selected forms of stance adverbials and their semantic categories

epistemic	<i>assuredly</i> (AYL 2.4.96), <i>by all means</i> (Wiv. 4.2.215), <i>by cock and pie</i> (Wiv. 1.1.3), <i>by my white beard</i> (WT 4.4.404)
attitudinal	<i>fortunately</i> (Lr. 2.2.167)
style	<i>generally</i> (TIM 2.2.112), <i>in a word</i> (TGV 2.4.71), <i>to say precisely</i> (AWW 2.2.12), <i>to speak more properly</i> (AYL 1.1.8), <i>in a sort</i> (Tmp. 2.1.104)

It should be stressed that, as a starting point, the initial assignment into semantic categories tried to rely on the sense of the signifier, although the categories of epistemic, attitudinal and style adverbials are fuzzy so that a function-to-form and a form-to-function mapping is interdependent. In other words, although the Hallidayean functions can be correlated to the

semantic classes identified in Biber et al. (1999) – epistemic adverbials refer to the experiential function, attitudinal adverbials refer to the interpersonal and style adverbials to the textual – , we will see that each category on its own can assume one or more of those Hallidayean functions and may be ambiguous between epistemic or attitudinal, for example.

The result for epistemic stance adverbials in Shakespeare is somewhat similar to findings for Present-day English outlined in Biber et al. (1999: 867): “All of the most common stance adverbials mark epistemic stance”. However, the strength of the preference for epistemic stance in Shakespeare is not reflected in Present-day English. There are indeed fewer occurrences of attitudinal and style stance adverbials in Present-day English than there are epistemic stance adverbials, but the frequencies for the former two semantic categories are much higher than they are in Shakespeare’s plays (Biber et al. 1999: 859f). One reason for this might be that the other uses still had to be developed (along the lines of grammaticalisation etc.). Also, in modern conversational English stance adverbials of style are more frequent than attitudinal stance adverbials. For Shakespeare’s plays one of the most important functions of epistemic stance adverbials is to express certainty (rather than doubt), as can be seen in Table 2.

Out of the ten most frequently occurring stance adverbials, seven denote certainty. This result contrasts with Present-day English where epistemic stance adverbials express certainty, but also often doubt. The most common three Present-day stance adverbials are *of course*, *perhaps* and *probably* (of which *of course* and *probably* are not used in Shakespeare). Also, Modern English conversation has particularly high frequencies of adverbials marking actuality (*actually*, *really*) and imprecision (*sort of*, *like*, *kind of*) (Biber et al. 1999: 867). Yet in Shakespeare, the lexical field of *truth* and *faith*, which has been coded as belonging to the field of epistemic stance adverbials, is particularly frequent in constructions like *by my troth* and *(in) faith*. It also occurs with verbs of communication, such as *to speak truth* and *to say sooth*, but less frequently so.

4.4. Forms of stance adverbials in Shakespeare’s plays

The variety of stance adverbials found in Shakespeare is similar to Present-day English (Biber et al. 1999: 862-863) and could therefore be seen as a stable factor in the history of English. Among the epistemic forms, the following patterns can be observed:

- (1) conjunction *as* followed by a clause (“As I am an honest Puck”, *MND* 5.1.417) or the preposition *for* (“As for that ravenous tiger Tamora, / No funeral rite, nor man in mourning weed, *Tit.* 5.3.196-200)

- (2) adverbs such as *indeed* (“These indeed seem, / For they are actions that a man might play”, *Ham.* 1.2.77-84)
- (3) single nouns such as *faith* or *sooth* (“No, faith, hate him not for my sake”, *AYL* 1.3.35)
- (4) noun phrases such as *good sooth* (“They in themselves, good sooth, are too light”, *MV* 2.6.42)
- (5) prepositional phrases with *by* (“Now, by my maidenhead at twelve year old, / I bade her come”, *Rom.* 1.3.2), with *in* (“No, in good earnest”, *WT* 1.2.150), with *on/upon* (“And on my life his malice ‘gainst the lady / Will suddenly break forth” *AYL* 1.2.282)
- (6) *to* infinitive followed by verbs of communication such as *to say* and *to speak* (“And to say truth, Verona brags of him”, *Rom.* 1.5.67)

Among the attitudinal stance adverbials, so far only adverbs are found. An example is *fortunately* in: “I know ‘tis from Cordelia / Who hath most *fortunately* been informed / Of my obscured course” (*Lr.* 2.2.167).

Style adverbials indicating stance take the following forms:

- (1) adverbs such as *generally* (“He is very often like a knight; and, generally, in all shapes that man goes up and down”, *TIM* 2.2.112)
- (2) infinitival clauses followed by verbs of communication such as *to speak* and *to say* followed by an adverb as in *to speak more properly* (“For my part, he keeps me rustically at home, or (to speak more properly) stays me here at home unkept”, *AYL* 1.1.8-9); the copula verb *to be* (“To be brief, the very truth is that the Jew, having done me wrong”, *MV* 2.2.132)
- (3) prepositional phrases beginning with the preposition *in* (“And in a word (for far behind his worth / Comes all the praises that I now bestow, / He is complete in feature and in mind”, *TGV* 2.4.71)

The set of syntactic realisations of stance adverbials in Shakespeare are used for a form-to-function mapping. Prepositional phrases and adverbs are the most frequently realised syntactic forms of stance adverbials in Shakespeare’s plays. Stance adverbials most frequently occur in initial position.

4.5. Case studies of stance adverbials

4.5.1. *indeed*

As mentioned, *indeed* is the most frequently occurring stance adverbial in Shakespeare’s plays with 447 occurrences, which amounts to 5.23 word per 10,000 words. A comparison of the frequency of occurrence of *indeed* in the PCEEC (Table 6) and the CED (Table 7) illustrates that *indeed* more

frequently occurs in the “constructed” spoken discourse, especially in the comedy section of the CED.

For the Shakespeare period, the letter corpus only shows a frequency of 2,51 per 10,000 words, while in the CED sections, “drama comedy” and “didactic works”, *indeed* appears almost as frequently as in Shakespeare plays with 5,25 words and 8,38 per 10,000 words in the “drama comedy” section and 5,59 words per 10,000 words in the corpus sub-section “didactic works” (Tables 6, 7). In the sections “didactic works” and “prose”, the use of *indeed* is also higher than in the Shakespeare corpus (Table 7).

Generally speaking, the distribution of *indeed* in the CED also shows a rather extensive rise of the use of *indeed* moving towards the 17th and 18th centuries. This increase is also visible – yet not as extensively – in the letter corpus. It can be said, however, that the use of the stance adverbial *indeed* remains to be a marker of constructed spoken discourse moving towards the Late Modern English period.

It is surprising that the CED sub-corpus “trials” only shows noteworthy usages of *indeed* for the Shakespeare period, while for the 17th and 18th centuries the frequencies decrease. In the “trials” sub-corpus, the records of the court proceedings were written down by an official scribe, who reported speech in a direct form without much intervention (Kytö and Walker 2006: 20). Either the stance adverbial *indeed* was not frequently used in court interaction after 1600 or the scribe did not record this rather subjective linguistic strategy of expressing one’s attitude. In the sub-corpus “witness deposition”, the testimony of a witness is written down by a scribe as a third-person narrative with extensive scribal intervention (Kytö and Walker 2006: 21). Again, the point of view as well as the choice of discourse presentation might explain why *indeed* is not considered to be relevant in recording the testimony of a witness because the pragmatic level of a testimony’s report was not considered to be noteworthy.

Table 6. Distribution of *indeed* in the PCEEC

	periods	absol. freq.	tokens per 10,000 words
M3	1350-1419	1	0,51
M4	1420-1499	7	0,19
E1	1500-1569	70	2,26
E2	1570-1639	229	2,51
E3	1640-1710	175	3,15
	sum	482	2,23

Table 7. Distribution of *indeed* in the CED (tokens per 10,000 words) (D1 1560-1599, D2 1600-1639, D3 1640-1679, D4 1680-1719, D5 1720-1760)

CED										
	tokens	witness	tokens	tokens	tokens	tokens	tokens	tokens	tokens	tokens
trials	per	deposi-	per	drama	per	didactic	per	prose	per	per
	10,000	tions	10,000	comedy	10,000	works	10,000	fiction	10,000	10,000
	words		words		words		words		words	words
D1	20	10,03	3	0,71	25	5,25	23	5,59	19	4,82
D2	3	2,08	8	2,00	40	8,39	62	10,88	28	6,44
D3	10	1,43	3	0,64	61	12,82	15	4,57	12	2,43
D4	32	3,31	1	0,38	46	9,75	52	6,66	45	9,50
D5	8	0,95	1	0,57	61	12,57	20	7,25	31	6,98
sum	73	2,56	16	0,93	233	9,77	172	7,27	135	6,03

The person-to-person orientation of the use of *indeed* in Shakespeare and its social function of addressing the speaker may serve as an exemplary analysis of the function of *indeed* in “constructed” spoken discourse in general.

One general function of *indeed* is to emphasise the speaker’s certainty about what is said. This is also explained in Thomas Thomas (1587) *Dictionarium Linguae Latinae et Anglicanae* where *indeed* collocates with “rightly, truly, as truth is.” The *OED* explains that *indeed* is frequently placed after a word for emphasis (*OED* 1.b.). This can be seen in an example from the letter corpus in which the foolishness of a writer is described as “indeed a vain glorious fool” and “And I saye, 'theye , 'bicause they be above the singuler numbere , although oonly Roderigo Mors writeth this booke, who is in dede a vayneglorious fole” (PCEEC, 1545).

In Shakespeare, contrary to the general trend in the Shakespeare corpus where stance adverbials most frequently occur in initial position, we most frequently find *indeed* in final position (243 times, as opposed to 95 cases in medial position and 109 in initial position). Interestingly, generally speaking, it occurs more frequently in verse, but, in the comedies, it is most frequently occurring in prose (116 times as opposed to 53 times) although, generally speaking, the comedies contain more verse. In *Ant.* 3.10.29, Enobarbus converses with Canidius during Antony’s fight with Caesar and foreshadows his sincere conviction of Antony’s defeat in the finally placed use of *indeed*: “Why then good night indeed” (*Ant.* 3.1.29). When Edgar sadly is forced to acknowledge Lear’s death, *indeed* in “He is gone indeed” (*Lr.* 5.3.316) is more than a stance adverbial stressing the truth of what is said. It carries almost additive extra-linguistic qualities because it refers to the actual visual process of Lear’s wasting away, and therewith refers to the

meaning of *indeed* as “in reality, in real nature” (*OED* 2.). As such, it encapsulates both Edgar’s and Kent’s despairing description of seeing Lear dying. Edgar exclaims: “He faints. My lord, my lord!” (*Lr.* 5.3.312) and Kent acknowledges: “Vex not his ghost. O, let him pass, he hates him / That would upon the rack of this tough world / Stretch him out longer” (*Lr.* 5.3.314-316). The scope of *indeed* is syntactically cancelled in Kent’s turn following Edgar’s “He is gone indeed” (*Lr.* 5.3.316), because with “The wonder is” Kent uses another modalising expression of stance in “The wonder is he has endur’d so long” (*Lr.* 5.3.317). From a discursual point of view both Kent and Edgar elaborate on the connotations as well as etymological base of *indeed* by stressing the physical necessity of showing one’s stance through real deeds rather than through appearance. Kent expresses his wish to follow his master: “My master calls me, I must not say no” (*Lr.* 5.3.322), and Edgar concludes the play with “Speak what we feel, not what we ought to say” (*Lr.* 5.3.325).

As mentioned, the core meaning of *indeed* still exists in Shakespeare’s time as synchronic layering, with that of a stance adverbial indicating sincerity (Traugott and Dasher 2002: 159-165), and it can be assumed to have been understood by an Elizabethan audience. It is visible in the example from *Antony and Cleopatra* already cited at the beginning of this paper in which Cleopatra and the eunuch Mardian play on the former and grammaticalised/subjectified meaning of *indeed* and *in deed* in *Ant.* 1.4.14. There are many occasions in Shakespeare’s plays where *indeed* takes on a jocular or cynical tone in addition to expressing the sincerity of what is said. In *Ham.* 1.2.83-84, Hamlet uses *indeed* to cynically elaborate on the discrepancies between appearance and reality, which are caused by the marriage between King Claudius and his mother and the death/murder of his father. “‘Tis not alone my inky cloak, good mother, / Nor customary suits of solemn black, / [...] These indeed seem, / For they are actions that a man might play“ (*Ham.* 1.2.77-84). Hamlet’s metaphorical description of how appearances of grief cannot really explain what he feels is encapsulated and summarised in his “These indeed seem” (*Ham.* 1.2.83). Syntactically, the scope of *indeed* is that of modifying – almost in an antithetical way – the verb *seem*.

Indeed is a marker of the spoken, but especially, of the “constructed” spoken discourse. By means of construing the stance of the speaker through the use of *indeed* as a pragmatic marker, this interactional function contains components of attention-getting, hedging, and turn-taking. It may also textually repair, sustain a discourse, mark boundaries, open a topic, shift it or close it.

4.5.2. *The by my construction*

The original preposition *bi* must have had a local sense (in the presence of) and is of native origin (*MED bi* 9a., and *OED by* 2.a.). In ME, it is not certain how far the use of *by* was native or in how far it was a translation of French *par* indicating instrumentality (*OED by* 2.a.). In ME, *by* occurs as part of an epistemic adverbial indicating sincerity, in constructions like “bi Crist!, bi God (gog)!, bi (Seint) Marie!, bi mi fei, lei, treuthe!, bi mi live!” (*MED bi* 9e). Both the *OED* (*by* 2.a.) and the *MED* (*bi* 9e.) describe these usages as asseverations, oaths, affirmations, and expletives. According to the *OED* (*by* 2.b.), in elliptical phrases the verb *swear* is not mentioned. What we find in ME, for example, are the following forms quoted from the *OED* entries (*OED by* 2.a.) and citing Chaucer’s *Parliament of Fowls* (c1380, c1430): “‘Wel bourded,’ quod the doke, ‘by myn hat!’” as well as Chaucer’s *Book of the Duchess* (1369, c1459): “By my trouthe, I take no kep Of nothing”.

In Shakespeare’s English, the construction *by my* as an epistemic stance adverbial indicating sincerity has a token frequency of 173 (2.01 tokens per 10,000 words). The construction is the second-most frequent construction realising stance adverbials in Shakespeare. Mention has been made that the expression *by my troth* has a frequency of 66 (rel. freq. 0.007) and makes up almost one third of these constructions. Yet, the type frequency is nevertheless very high. It amounts to 56 types (and is therefore higher than that for the preposition *by*).

In the letter corpus (Table 8), the raw number of occurrences of the *by my* construction is not high and the distribution is very uneven, with hardly any occurrences for the periods 1350-1419 and 1500-1569 and an increase from 0,87 words per 10,000 for 1570-1639 to 2,21 for the period 1640 to 1710. It is also interesting to see that for the period 1420-1499 most of the forms have a religious basis and consist of the type *by my troth* and *by my faith*, while the forms from the 16th and 17th centuries do not exclusively show religious terminology. The lexical fields drawn on become more secular in the way they try to enhance the sincerity-indicating force of the utterance. One example would be *by my mother*. One reason for this lexical broadening might be the religious wars in the 16th century as well as the 1606 Profanity Act “An Act to Restrain Abuses of Players” which prohibited spoken profanity, irreligion in any dramatic production, and policing of speech with religious reference. This caused speakers to refrain from using religious terminology in the *by my* construction to stress the sincerity of their utterance. The construction, however, seems to have survived or at least been taken up again by Shakespeare and other dramatists to serve their

dramatic purposes. In the CED corpora, it is most frequently occurring in the constructed spoken sections, but most frequently for the period 1720-1760 while – again – this construction fairly rarely occurs in the “witness deposition” and “trials” sub-corpora.

Table 8. Distribution of the *by my* construction in the PCEEC

	periods	absolute frequency	tokens per 10,000 words
M3	1350-1419	0	0,00
M4	1420-1499	30	0,82
E1	1500-1569	3	0,10
E2	1570-1639	79	0,87
E3	1640-1710	123	2,21
	sum	235	1,09

Table 9. Distribution of the *by my* construction in the CED (D1 1560-1599, D2 1600-1639, D3 1640-1679, D4 1680-1719, D5 1720-1760)

CED										
	tokens per 10,000 words	witness deposi- tions	tokens per 10,000 words	dra- ma com- edy	tokens per 10,000 words	tokens per 10,000 words	tokens per 10,000 words	tokens per 10,000 words	tokens per 10,000 words	tokens per 10,000 words
D1	0	0,00	3	0,71	8	1,68	1	0,24	13	3,30
D2	0	0,00	0	0,00	13	2,73	3	0,53	7	1,61
D3	1	0,14	1	0,21	4	0,84	0	0,00	3	0,61
D4	2	0,21	0	0,00	30	6,36	9	1,15	4	0,84
D5	0	0,00	0	0,00	3	0,62	0	0,00	1	0,23
sum	3	0,35	4	0,23	58	2,43	13	0,55	28	1,25

In Shakespeare, the construction is used most creatively. We can find: *by my fay* (*Rom.* 1.5.126), *foes* (*TN* 5.1.19), *George, by my Garter and my Crown* (*R3* 4.4.366), *God* (*Tit.* 5.1.86), *halidom* (*TGV* 4.2.135), *hand* (*Mac.* 3.2.93), *head* (*Rom.* 3.1.35, *Rom.* 3.1.36), *holidam* (*Shr.* 5.9.99), *white beard* (*WT* 4.4.404). What these terms share – or, in other words, what these terms are lexically primed for (Hoey 2005) – is that the persons, concepts or things referred to are usually held in high esteem by the speaker. Also, they are thought to be appreciated by the hearer. More generally speaking, they also create and reflect the Elizabethan world picture (Tillyard [1943] 1973). Swearing on a father or mother, for example, indicates sincerity. Other expressions, such as the reference *to my white beard*, may be a sign of the speaker’s wisdom or maturity and humility, but the use may also point to the momentary nature of what is said or the transience of a proposition, because a beard can be cut off.

Therefore, the discursive potential of the *by my* construction is multi-functional and also has to be related to the position in which these constructions occur. This can be illustrated first with an example from the letter corpus: “for by my trowthe they haue as well deseruyd it as eny men +tat euer bare lyue” (PCEEC, PASTON, 1469). In this example, John Paston writes to his brother about “John Chapman and hys iij felaws” and asks him to pay them for their good service. The initial position of *by my troth* indicates the writer’s conviction that they have done good work. Despite the formulaic character of this form *by my troth* interpersonally indicates to the recipient the need (or even requests him) to actually pay the workers. Hence, the adverbial has scope over the entire declarative sentence. Textually, it functions like a pause, interpersonally construing the stance, and prepares the reader for what follows, while again interpersonally framing the proposition.

In Shakespeare, following the general pattern of stance adverbials in Shakespeare, the *by my* construction also appears most frequently in initial position. In *MND* 3.2.251, Lysander, who is under the effect of the love potion, expresses his love for Helena (rather than Hermia). He uses the initially positioned *by my life* to underline the sincerity of his love, but also to beg for a positive answer. This address causes further confusion and reinforces the comedy of the play. It is therefore also directed at the audience: “Helen, I love thee, by my life I do” (*MND* 3.2.51). The exclamation “by my life I do” (*MND* 3.2.251) encapsulates and cohesively links (by means of ellipsis) the declaration of love. The scope is extended to the following speech act *I swear*. *By my life* also foreshadows the love declaration by Demetrius, who is likewise under the effect of the potion, and who elaborates on *by my life* through his confession that he allegedly loves Helena “more” than Lysander does. The *by my* phrase as a pragmatic marker is not restricted in scope to just one sentence, but relates to larger stretches of the discourse.

In the following example from the Bishop’s Court (1561) at Chester a direct speech presentation of the words exchanged at the engagement of Edward Morgan and Elizabeth Bird is given:

She: "I wilbe your wief, and take you for my husband from hense forth, by my faith and trowth, with all my hart."

“And he, the said Morgan, likewise [...] He said “I take you for my wief, with all my hart, & I will marry you, by my faith & trouthe”.

Some of the felicity conditions do not seem to be fulfilled when the actual act of the engagement is performed, as is retrospectively noted by the

scribe in the witness deposition and one of the reasons why they end up at court. They do not exchange a ring (but send it later) to seal the spoken ceremony, although Edward then had obviously asked Elizabeth “whether she wold be content to geve hym her faith and trouthe before such as were there.” It is just the act of confession with words, a formula, which is to serve the purpose on both sides. She is reported to have said: “I wilbe your wief, and # take you for my husband from hense forth, by my faith and trouthe, with all my hart.” And he is reported to have encountered: “I take you for my wief, with all my hart, & I will marry you, by my faith & trouthe”. Like a performative verb, the adverbial construction *by my* – temporarily at least – performs and seals the act of engagement. Hence, because of this formulaic character of the stance adverbial and it being part of the actual performative act of the engagement the scribe considers it adequate to include it in his retrospective report.

During the Early Modern English period the *by my* construction experiences a creative revival, which is exploited in the historical data of the constructed dialogues. We find a more secular lexical set that follows the preposition and the possessive pronoun. The sub-corpora “trials” and “witness deposition” do not show a significant number of this rather emotional stance adverbial.

5. Conclusion

Despite the complexity of historical text analysis this paper has illustrated that the analysis of pragmatic data from past stages of the English language is possible and fruitful to address such aspects of language stability and change, genre distribution and the interplay between Present-day and past practices of language usage. Underlying parameters have been identified that may facilitate the search procedure and that illustrate the need to combine quantitative corpus-based searches on the one hand and more philologically qualitative analyses on the other within a historically informed research framework.

The type-frequency as well as the wide range of syntactic realisations of stance adverbials turn them into meaning-making interpersonal, textual and at times even experiential markers. Stance adverbials in general and epistemic, attitudinal and style adverbials in particular are most frequent in the comedies, although epistemic stance adverbials indicating truth and certainty outnumber the other semantic categories by far. Reasons for this distribution are complex but can partly be seen in the verse/prose distinction and

might also result from particular Early Modern discursual strategies of expressing sincerity. EModE politeness features additionally play a role and the fact that most of the epistemic stance adverbials indicate certainty rather than viewpoint or imprecision. There is more directness and less hedging. Most stance adverbials take on initial position. *Indeed* shows a variety of semantic layering, which is used by Shakespeare for his dramatic purpose. The *by my* construction is particularly frequent in fictional and constructed conversation and allows for an extensive lexical variety that is indicative of the speaker's attitude and of the Early Modern world-view.

Notes

1. The abbreviations for the Shakespeare plays follow the *MLA* standard.
2. See <http://www.oed.com/thesaurus>
3. See *Shakespeare Database*. <URL: <http://www.shkspr.uni-muenster.de/>
4. Relative frequencies enable the meaningful comparison of frequencies drawn from datasets that differ in size. They are calculated by dividing the target frequency (in this case, the total number of stance adverbials) by the total of items in the data (in this case, the total number of words in Shakespeare, i. e. 857,705 words) and then multiplying by 100, which leads to the frequency per 100 words, in effect percentage.

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Using methods of historical linguistics in Indo-European and Tibetan

Roland Bielmeier

1. Introduction

Based on the empirical fact that languages constantly change, historical linguistics describes historical language change. Its main objectives are reconstructing earlier stages of languages and common proto-languages as well as determining the relationship between languages defining genetically related language families. Starting from the traditional historical-comparative or simply comparative method of the late 18th century applied to Indo-European (IE) languages including reconstructed Proto-Indo-European (PIE) and characterized by the notions *sound laws* and *analogy*, new methods have emerged since then and have been applied to IE as well as to non-IE languages. However, the comparative method is still the most important tool in historical language reconstruction followed by internal reconstruction, and not to forget – semantic reconstruction. In this paper,¹ the power and achievements of the comparative method will be illustrated by well-known examples from IE languages and PIE and then applied to the historical development of Tibetan, i.e. from Old and Classical Tibetan, usually addressed together as Written Tibetan (WT),² to its numerous and widespread modern dialects. This is to examine whether these methods of historical linguistics can also be successfully applied to the non-IE language and dialect varieties of Tibetan within the Tibeto-Burman language family.

2. Syllable and word structure in Indo-European and Tibetan

2.1. Syllable structure in Indo-European

In applying the different methods of historical linguistics, especially the comparative method to IE and Tibetan, we will see that syllable structure in both language families seems to play an eminent role for the understanding of the respective sound changes. In both language families the verbal roots are monosyllabic showing a very similar internal structure at a first glance.

For PIE, Szemerényi (1989: 102) lists all combinations with a short vowel *V* and at least one final consonant *C*, *VC* being the simplest and *CCCVCC* the most complex.³ His list has to be revised slightly, as *VC* **ed-* ‘to eat’ is from **h₁ed-*, but already in Old IE languages, where the laryngeals have been dropped, the type *VC* is quite common. For *CCCVCC* Tichy (2000: 34) gives PIE **streyg-* ‘streichen, to stroke’ and for *CCVCCC* **stemb^hH-* ‘sich stemmen, to lean upon’. With PIE nouns, the consonant clusters are simpler in general, *C* and *CC* initially are common, but due to ablaut, derivation, compounding and inflection, more complicated clusters can occur, like Latin *pecten* ‘comb’ < **pek^h-ten-* having *CCCC* in the oblique case **pk^h-tn-es* with zero-grades of the root and the suffix, or *CCC* in **psten-* ‘female breast’, cf. Young Avestan *fštāna-* ‘id.’, *CCy* in **g^hdies*, Old Indian *hyáh*, ‘yesterday’ (cf. Mayrhofer 1986: 117, 155). In this listing of possible PIE syllable structures, *C* stands for any consonant including resonants (liquids *l, r*, nasals *m, n*, and glides *y, w*, traditionally written as non-syllabic *i, u*) and laryngeals (*h₁, h₂, h₃* or *H*). But resonants and laryngeals can occur in syllabic position like a vowel. Therefore, the resonants are better designated by the cover symbol *R* and the laryngeals by the cover symbol *H*, which is also used in reconstructions when we know that we have to assume a laryngeal in a certain position, but cannot further determine whether it was *h₁, h₂* or *h₃*. Describing the PIE root on the basis of the full grade form with the vowel *e*,

the structure of the most PIE roots can be boiled down to a single template, **CeC-* ... This template could be modified in certain ways, especially by adding consonants either at the beginning or the end to form consonant clusters. Most commonly, a resonant could occur on either side of the vowel, resulting in roots of the shape **CR_eC-*, **CeRC-*, and **CR_eRC* (Fortson 2010: 76),

e.g., **ped-* ‘foot’, **d^hwer-* ‘door’, **derk^h-* ‘see’, **grend^h-* ‘grind’. “Roots could also have any of the basic structures above preceded by *s*. Some examples include **spek^h-* ‘see’, **steg-* ‘cover’, **sneig^{wh}-* ‘snow’, and **strenk-* ‘tight’. A curious fact about such roots is that they sometimes appear without the initial *s*-, for reasons still not understood; these are called *s*-mobile roots.” (Fortson 2010: 76).⁴

The bulk of roots with laryngeals fall into the three types just introduced – **CeH-*, **HeC-*, and **HReC*. The mirror image of the last type, **CeRH*, is also common, as in **wemh₁-* ‘vomit’, **terh₂-* ‘cross over, overcome’, and **kelh₂-* ‘cry out’. Less commonly, the laryngeal neighbored a stop, as in

**h₃b^hel-* ‘be of use’ and **pleth₂-* ‘broad’. In all these cases, the laryngeal was either the first or last consonant of the root. Some roots contained a laryngeal before the final consonant, like **d^heh₁s-* ‘sacred’ and **neh₃t-* ‘but-tocks’. (Fortson 2010: 78)

In addition to this structure of PIE roots there are certain constraints of the root.

Certain classes of consonants rarely or never co-occur within a given PIE root. There are not many securely reconstructible roots containing two plain (unaspirated) stops (type **bed-*) or a voiceless stop and a voiced aspirate (type **b^het-* or **teb^h-*, although the second of these is commonly found if preceded by an *s*, so **steb^h-*). The source of these constraints is unknown. (Fortson 2010: 78)

A further element attributing to the root and its syllable structure are root extensions. “The root *(*s*)*teu-* ‘push, hit, thrust, for example, appears extended or enlarged as *(*s*)*teu-k-*, *(*s*)*teu-g-*, and *(*s*)*teu-d-* (reflected respectively e.g. in Gk. *tikos* ‘hammer’, Eng. *stoke*, and Ved. *tudāti* ‘beats’). The source and function of these extensions are not known.” (Fortson 2010: 78–79). To sum up: “The maximum number of consonants in a word-initial cluster appears to have been three ... The most common word-initial clusters are those where the second consonant is a resonant.” (Fortson 2010: 64, with examples). This is certainly correct and as mentioned earlier there are some words with initial clusters consisting of three consonants. These are usually verbal roots containing a resonant or *s* or both.

2.2. Syllable structure in Tibetan

With respect to the number of consonants in clusters the syllable structure of WT seems to be slightly more complicated than in PIE. In WT, the type *VC* can be disputed.⁵ The range goes from *CV*, a very common type with nouns and rare with verbs but occurring, cf. WT *nu* ‘to cry, weep’, till the type *CCCCVCC* with verbs, cf. WT *bsgrigs* ‘to put in order (pfv.)’ with several more or less productive morpheme boundaries in between: *b-s-grig-s* with the *CCVC* verbal root *grig* ‘to fit, suit’. The rest are grammatical morphemes. Outside the verbs, morpheme boundaries are in general rarely apparent. Thus, also in the case of four initial consonants occurring only with the two numerals WT *brgya* ‘hundred’ and WT *brgyad* ‘eight’, but *CCCCVCC* is not uncommon, cf. WT *rgyags* ‘provisions’. All initial clusters

are subject to rigid restrictions, e.g. the six initial cluster types with *CCCC* are either *bCCy* or *bCCr*, and *CC* = *rk*, *sk*, *rg* or *sg*. A broader variation can be found with *CCC*-clusters, but also with them, only certain combinations of consonants are allowed. For example, the voiceless aspirated *kh*, *ch* and *th* in middle position can only be preceded by *m* or 'a-chuñ,⁶ and *ph* only by 'a-chuñ. In third position very often occur *y* or *r*, and sometimes *l*. If the third consonant is *k*, *g*, *ñ*, *j*, *ñ*, *t*, *d*, *ts* or *dz*, it can only be preceded by *br*- or *bs*-. A minor exception are *t* and *d*. With them also the clusters *blt*- and *bld*- may occur, etc.

However, the structure of the initial consonant clusters of WT with their restrictions and as well the whole syllable structure can better be understood on the basis of a concept developed by the indigenous Tibetan grammarians, which also allows a better understanding of the sound change phenomena to be discussed here. A Tibetan syllable, often representing a lexical item, is usually divided into two parts. The first part consists of the consonant or the consonant cluster up to four consonants preceding a single vowel, the syllabic nucleus,⁷ and the second part consists of the vowel itself followed by zero, a simple consonant or a consonant cluster, consisting of two consonants at the most. The second part is usually called *rhyme*, a notion from traditional Chinese linguistics but also widely used in present-day phonetics. The possible rhymes of WT are: *-V*, *-Vg(s)*, *-Vñ(s)*, *-Vd*, *-Vn*, *-Vb(s)*, *-Vm(s)*, *-Vr*, *-Vl*, *-Vs*. For Old Tibetan the rhymes *-Vnd*, *-Vrd*, and *-Vld*, simplified to *-Vn*, *-Vr* and *-Vl* in WT have to be added. The WT rhymes have more or less changed in all Tibetan dialects with the exception of Western Archaic Tibetan (WAT).⁸ And of course, in polysyllabic words some of the changes are different.

The internal linguistic structure of the first part of the syllable is represented to a large extent in the graphic structure of the orthographic writing. The root initial consonant is graphically represented by a single consonant sign around which certain single consonant signs can be prescribed, superscribed or subscribed. The pre- and superscribed consonant signs represent prefixed consonants and the subscribed a postfixed consonant.⁹ Thus we get four consonants maximum in the first part of the syllable. Several linguistic phenomena clearly distinguish the initial position from the prefixed or postfixed positions in addition to the rules of writing. One important fact is that in this initial position, all consonants of the inventory can occur, in prefixed and postfixed position, however, only certain consonants are allowed. In prefixed position we find *g*, *d*, *b*, *m*, 'a-chuñ as prescripts with the restriction that *m* cannot precede the labial stops, and *r*, *l*, *s* as superscripts. In postfixed position we find mainly *r* and *y*, less often

l^{10} and only marginally w . The linguistic reason for the different writing of prefixed consonants as super- and prescripts is not fully clear. At any rate it works as an order rule. If the initial has a super- and a prescript at the same time, it is the sound represented by the superscript that immediately precedes the initial. And according to the rule that in one syllable only one super- and one prescript may be written, the different writing allows two prefixes. A further restriction is that certain initials allow only certain prefixes and postfixes. Gemination is not possible. Thus, for example, clusters like *dk-*, *dg-*, *dp-* or *db-* are possible but not **dd-* or **dt-*. Instead we find *gt-* and *gd-*, and it has been speculated whether the prescribed prefixes *d-* and *g-* are in complementary distribution. The problem is that we cannot ascribe clear functions or even a common function to the prefixes *d-* and *g-*. A strong argument in favor of the special position of the initial consonant in contrast to the prefixed consonants is the fact that there is a voicing assimilation in all known modern varieties with initial consonant clusters. The voicing of the first consonant assimilated to that of the second, which can be proven by comparison with the etymological correspondence of WT, cf. the WAT dialect of Leh *storma* ‘offering’ (< WT *gtor ma*) and *rdonj* ‘face’ (< WT *gdonj*).

2.3. Word structure and word formation in Indo-European

After the analysis of the PIE and Tibetan monosyllabic lexical root of verbs and nouns we will also briefly look at the number of the syllables of words and at word formation. In PIE, besides the monosyllabic root, we can also reconstruct disyllabic word stems to some extent like **seh₂uel-* ‘sun’ or **d^heg^hōm* ‘earth’. But in PIE, also monosyllabic roots became often di- or polysyllabic by taking certain prefixed and suffixed syllabic elements.

With verbal roots, we mainly find preverbs, tense or mood suffixes and personal endings. And such complete verb forms are the basis which language change phenomena apply on. In WT, besides the grammatical morphemes mentioned above, there is no further affixation and the verb is impersonal. But in the course of time the modern varieties developed predicates where the main verb is followed by different morphemes, auxiliaries or second verbs to express tense, aspect, mood (TAM) and evidentiality categories. In these collocations, certain phenomena of vowel harmony may be observed (cf. Haller, forthcoming).

Monosyllabic root nouns, usually with ablaut, like **k^{er}d-* ‘heart’ or **ped-* ‘foot’ were common in PIE, but many became disyllabic by derivation, by compounding and, of course, by adding inflectional endings. A

productive derivation was the formation of a thematic stem by adding the thematic vowel **e/o* to athematic nouns, cf. Old Indian athematic *pad-* ‘foot’ > nom.sg. *pāt* > acc.sg. *pād-am* with reanalysis > *pāda-m* > thematic *pāda-* ‘foot’. The suffixes, often with ablaut, are semantically more or less transparent. Semantically clear, e.g., is the suffix **-ih₂/ieh₂-* which designates female persons or animals, cf. **deiw-* > **deiw-o-*, Old Indian *deva-* ‘god’ and **deiw-ih₂*, Old Indian *devī* ‘goddess’, or the suffix **-ter* indicating kinship, cf. **ph₂-ter-* ‘father’ and **mā-ter-* ‘mother’, but the suffix in **d^heg^h-ōm* ‘earth’ is functionally or semantically less transparent. An old disyllabic numeral seems to be **k₁mtom* ‘hundred’, cf. Old Indian *śatam* and Latin *centum*. But it goes back to the derivation **dk₁mtō-* ‘the tenth (ten)’ < monosyllabic **dek₁m* ‘ten’. And finally, inflexion endings also contribute substantially to the polysyllabic character, even with monosyllabic pronouns, e.g., nom.sg. **k^wi-s* ‘who’ and gen.sg. **k^wo-sio*, Old Indian *kasya* ‘whose’. In general, derivation by suffixes is complicated in PIE as there is a considerable number of suffixes often accompanied by ablaut phenomena of the root and of the suffix itself.¹¹ Concerning compounding in PIE and Old IE languages, we find the well-known formations like *dvandvas*, *tatpuruṣas*, *bahuvrīhis*, etc. With *tatpuruṣas*, the first member of the compound is often based on the stem form, cf. OI *viś-pati-* ‘lord of the house, leader of a clan’ < *viś-* ‘house’ and *pati-* ‘chief’, but also case forms occur in first position, e.g. the genitive in OI *divas-pati* ‘lord of the heaven’.

2.4. Word structure and word formation in Tibetan

In Tibetan varieties, nominal compounding and derivation seem to be more transparent than in PIE. With the exception of the verbal roots there are no ablaut phenomena. In compounding we also find formations like *dvandvas* and *tatpuruṣas*, etc. If the words are monosyllabic, they are simply joined together, cf. WT *dmag dpon* ‘army commander’ < *dmag* ‘army’ and *dpon* ‘chief’. But if they are disyllabic, the second syllable of both members is often dropped, e.g. WT *mun pa* ‘darkness’ and *nag po* ‘black’ > *mun nag* ‘black darkness’. There are also derivational suffixes, but they are also simply joined without any further change, cf. WT *ñes pa* ‘crime’ > *ñes pa can* ‘(a) criminal’. The same is more or less valid for case marking in WT. In some cases like genitive different allomorphs are added depending on the kind of auslaut of the noun. In modern dialects, case marking often shows more variation especially with nouns ending in a vowel. And in gen-

eral we often find phenomena of vowel harmony and tone sandhi in modern varieties.

The syllabic segmentation coincides with the morphemic segmentation in both language families not in all cases, cf. Old Indian *agnim-indha-* ‘lighting a fire’ where the syllabic segmentation is *ag-ni-min-dha*. This also occurs with simplicia, e.g. Old Indian thematic *garbha-* ‘womb’ < **g^wolbh-o-* and the syllabic segmentation *gar-bha-*. In WT as well as in the more conservative modern varieties, this phenomenon can be observed e.g. in compounds with an open syllable as first member and with an initial consonant cluster of the second member, cf. WT *sa bdag* ‘landlord’ < *sa* ‘earth, land’ and *bdag po* ‘proprietor, master’ with a syllable structure *sab-dag*, still present in the Amdo dialect of Labrang *s^hab-dax* but dropped in the Kham dialect of Lithang *s^ha-da?* (H-H)¹² ‘id.’ or WT *rdo rje* ‘vajra, diamond’ < *rdo* ‘stone’ and *rje* ‘lord, master’ with a syllable structure *rdor-je*, still present in the Western Innovative Tibetan (WIT) dialect of Tabo *dor-dze* (L-H) ‘id.’, but dropped in the Central Tibetan (CT) dialect of Shigatse *to-tse* (L-H).

3. Comparative method in Indo-European and Tibetan

The comparative method is used in historical (or comparative or historical-comparative) linguistics for comparative or external reconstruction

by comparing particular phenomena in several related (or presumably related) languages. Comparative reconstruction became particularly significant and its methods underwent refinement in the nineteenth century with the elucidation of the Indo-European obstruent (= stops and fricatives) system, which was reconstructed by comparing the consonantal systems of the individual Indo-European languages (Grimm’s Law, Verner’s Law). Comparative reconstruction forms the foundation of comparative linguistics and was used primarily by the Neogrammarians in connection with their thesis of the regularity of sound laws. (Bussmann 1996: 398)

Applying comparative method to both language families, we will give examples for unconditioned and conditioned vowel and consonant changes and show that in Tibetan, vowel and consonant changes can often not be separated from one another. The hypothesis is that in Tibetan, in contrast to PIE and IE languages, most sound changes are conditioned changes, a fact which is due to the peculiar syllable structure including the mentioned rigid

restrictions of occurrence and co-occurrence in the syllable to which the vowels and the consonants are subjected.

3.1. Vowel change in Indo-European and Tibetan

It is well-known that without introducing the question of laryngeals, PIE possessed five short vowels **a *i *u *e *o* which remained unchanged in general in Latin and early Old Greek. In Indo-Iranian **a *e *o* merged into **a* and in Germanic **a* and **o* merged into **a*, opposite to *o* in Old Church Slavonic. This example for an unconditioned vowel change can be illustrated by PIE **ghostis* ‘alien’, cf. Latin *hostis* ‘enemy’, for which we find *gasts* in Gothic, *gast* in Old Saxon and Old High German, but *gostb* ‘guest’ in Old Church Slavonic. In Old Norse and Old English Germanic **a* underwent a further change and became fronted in most positions, cf. Old Norse *gestr* and Old English *giest* ‘guest’. We speak of an unconditioned sound change as it takes place independently of the position of the vowel within the word. There are three main positions, initial, internal and final. Taking the change of **o > *a* in Germanic as an example we find it initially with **oktō(u)* (< **h₃ekt-*) ‘eight’ > Old High German *ahto*, and for the internal position cf. **pork-o-* ‘pig’ and Old High German *farh* ‘porcellus’. The assumed change of PIE **o > Germanic *a* in final syllable can be documented by **g^hltom* (< **g^hlh₃-*) > Germanic **gulpa(n)* > Finnish borrowed *kulta*, Gothic *gulþ* ‘gold’ and for final **-o-s* see below. There are not many prominent conditioned vowel changes in IE. One could mention Brugmann’s Law saying that an original short **o* in open syllable was lengthened and appeared as long *ā* in Sanskrit. In closed syllables, including laryngeal as closing element, it remained short and became *a* in Sanskrit. More prominent are of course the effects of laryngeals on neighbouring **e* in PIE. The well-known basic facts are the change of the vowel quality with originally preceding laryngeals and the change of the vowel quantity with originally following laryngeals in tautosyllabic position: **h₁e > *e*, **h₂e > *a*, **h₃ > *o*, **eh₁ > *ē*, **eh₂ > *ā*, *eh₃ > *ō*.

In WT, we have the same system of five vowels *a i u e o*. The difference lies in the fact that there was no distinction between short and long vowels like in PIE. And we have only two positions in which the vowel may occur, finally and internally. Under the condition of absolute final position we find only little vowel change in the most modern varieties, in contrast to remarkable changes in syllable internal position, where mainly the following consonant is essential for the kind of change of the preceding vowel. In all available Tibetan varieties spread over the whole Tibetan speaking area in monosyllabic words, semantically belonging to a certain

core vocabulary, final *-a* and *-o* have remained unchanged, as in WT *ña* ‘I’, *sa* ‘earth’, *bya* ‘bird’, *brgya* ‘hundred’ or *lo* ‘year’, *so* ‘tooth’, *rdo* ‘stone’ and *sgo* ‘door’.¹³ The vowel *e* occurs much less in final position, but there are basic lexical items showing that *e* seems to have a similar stability, cf. WT *me* ‘fire’, *ske* ‘neck’, *lce* ‘tongue’.¹⁴ Final *-i* and *-u* are very common in this position and, roughly speaking, they are retained in Western and Central Tibetan dialects but they merge into *-ə* in a part of the Kham dialects and fully in the Amdo dialects. In all the recorded Amdo material there is no exception to this sound law, i.e. WT final *-i* and *-u* merge into *-ə*. But in some Kham varieties beside *-ə* < *-i* we also find *-e* and beside *-ə* < *-u* we also find *-o* or a retaining of *-u*. This can be shown by the development of basic lexical items like WT *mi* ‘human being, man’, *bzi* ‘four’, *khyi* ‘dog’, *gri* ‘knife’ or *chu* ‘water’, *bcu* ‘ten’, *su* ‘who’ and *glu* ‘song’.¹⁵

In a large part of the modern Tibetan varieties, conditioned vowel change is one of the most obvious sound change phenomena and concerns the rhyme of a syllable. That means, as already mentioned, the vowel change induced by originally following consonants includes also a change of the final consonant in most cases. Thus, the change of the internal vowel cannot be seen separately from the change of the following final consonant. This kind of change is not completely unknown to IE languages. But it played a clearly less prominent role. To illustrate, we pick examples from the Germanic *Auslautgesetze*. In Germanic, with the exception of monosyllabic words, final *-a* was generally dropped but retained if it was originally followed by a consonant, cf. **so* ‘this’ > Gothic *sa*, **woida* ‘knows’ > Gothic *wait*, **kʀnom* ‘horn’ > Old Norse *horn* (acc.sg.). If the final was a dental occlusive it was generally dropped without influencing the vowel, cf. **bher-oi-t*, Old Indian *bhar-e-t*, > Gothic *baírai* ‘he may carry’ (cf. also Greek *féroi* < **féroit*). In case of a final *-s* following *a* (< **o*), in Gothic the vowel was dropped but the final *-s* was retained, cf. **ágr-o-s* (< **h₂eǵ-ro-s*) ‘pasturage’ > Old Norse *akr*, Old High German *ackar*, Gothic *akrs*, **wlpo-s* (< **włk^wo-s*) ‘wulf’ > Old Norse *ulfr*, Old High German *wolf*, Gothic *wulfs*, **g^hostis* ‘alien’ > Old Norse *gestr*, Old High German *gast*, Gothic *gasts* ‘guest’, but **sunu-s* (< **suH-nu-s*) ‘son’ > Old Norse *sunr*, Old High German *sunu*, Gothic *sunus* and **sed^hus* (< **swe^heh₁-?*) ‘custom’ > Old Norse *sidr*, Old High German *situ*, and Gothic *sidus*. From these developments, we see that in Old Norse short *a* (< **o*), *i* and *u* before final *-s* are dropped and *-s* changed into *-r*. The vowel quality before final *-s* does not seem to play any role. In Old High German and in Gothic the vowel quality seems to play a role, as in Old High German final *-s* is always dropped and preceding *a* and *i* are also dropped. But preceding

u is retained. In Gothic, the vowels have undergone the same development as in Old High German, but final *-s* is retained. Using the concept *rhyme* of the Tibetan tradition we could say: PIE **-os* (> **-as*), **-is* > Gothic *-s*, Old Norse *-r*, Old High German > zero vs. **-us* > Gothic *-us*, Old Norse *-r*, Old High German > *-u*. This is an example for a conditioned Germanic sound change of the rhyme *-Vs* with interaction between final *-s* and its preceding vowel.

This kind of conditioned sound change is most widespread not only in Tibetan but also in many other Tibeto-Burman languages. An exhaustive presentation of all changes in the many different Tibetan varieties is not possible here. As an example and to enable a typological comparison with Germanic, the historical development of *-Vd* and *-Vs* in monosyllabic words will be presented with a few records. WT *skad* ‘sound, voice, speech, language’ has remained nearly unchanged in WAT, in the far west of the Tibetan language area, cf. e.g. Balti and Leh dialect *skat* ‘id.’¹⁶ In conservative Amdo dialects in the far east, the initial *s-* has slightly changed and became retroflex, and the final dental stop became *-l*, cf. Themchen *skal* ‘id.’ However, the final dental stop was replaced by a glottal stop or dropped fully in the Central Tibetan dialects, sometimes accompanied by a phonological falling tone and the vowel *a* changed into *e* of different qualities depending on the respective variety, cf. Gergye *ke?* (H), Tshochen *ke?* (H), Dingri *ke?* (HF), Kyirong *ke?* (HF), etc. The rhyme of *-as* has changed in a different way, especially in Amdo, cf. WT *ras* ‘(cotton) cloth’ which is again retained in WAT, cf. Balti and Leh dialect *ras* ‘id.’ In CT final *-s* was dropped and the vowel *a* also changed into *e* of different qualities depending on the respective variety, and often leading to vowel length, cf. Gergye *re:* (L), Tshochen *re:* (L), Dingri and Kyirong *re:* (LF). In Kham Tibetan the changes are very similar, but in Amdo Tibetan WT *-as* usually changed to *-i* and in a few varieties to *-e*, cf. the Amdo dialects of Themchen, Mkharmar, Rkangtsha, Chabcha, Rngaba, Rmastod, Mdzorganrabar *ri* ‘id.’, but the Amdo dialect of Labrang (Xiahe) *re* ‘id.’

3.2. Consonant change in Indo-European and Tibetan

From this small sample it becomes already comprehensible that vowel changes in Tibetan follow strict sound laws and can be described by the comparative method. But they are always conditioned vowel changes. The same can be shown for the consonant changes, at least equally important and characteristic for the development of the PIE daughter languages as well as for the development of the different Tibetan varieties. An essential

difference in handling consonant change lies in the fact that IE linguistics is accustomed to primarily examine the changes of single consonants in different positions within the word. It has been observed that in clusters they sometimes influence each other to a certain extent, e.g. by voicing assimilation. But in the description this is only a second step. One of the reasons for this procedure is that there is a considerable amount of unconditioned change, i.e. the consonants change irrespectively of their neighbourhood. In my opinion, this domination of unconditioned change is also due to the syllable structure of PIE. As we have seen, the basic syllable structure in PIE is *CeC with the modifications *CReC-, *CeRC-, and *CReRC. More complicated consonant clusters occur but are not frequent. Therefore, the consonants usually occur in the neighbourhood of vowels or resonants. This neighbourhood favours the independent or unconditioned change of single consonants. Thus, the unconditioned sound change is the normal case. In the Tibetan syllable, where words with initial clusters of two consonants are the most frequent, and initial clusters with three or sometimes even four consonants occur, mutual influence of them is much more probable. Therefore, the conditioned sound change is the normal case.

According to the *opinio communis* the PIE stop inventory had fifteen stops classified into three series according to the manner of articulation: voiceless, voiced and voiced aspirated. Each series contained five stops with different places of articulation: labial, dental, palatal, velar and labio-velar. In WT there are also three series: voiceless, voiced and voiceless aspirated. But each series contains only three stops according to the manner of articulation: labial, dental and velar, extended by two kinds of affricates, alveolar and post-alveolar affricates. In certain reconstructed PIE daughter language groups like Germanic and in certain Old IE single languages PIE palatal velars and PIE plain velars have merged into plain velars reducing the five stops in each series of PIE to four and grouping among others Germanic in the so-called “centum” branch. In Tibetan, we find the opposite development in WIT, CT and in some areas of Amdo. In these dialects a new series of palatal stops apart from the plain velar stops emerged from the clusters of plain velars followed by the glide y, cf. WT *rgyab* ‘back’ > WIT Tabo *jep* (L), CT Shigatse *cap* (L), Jirel *jap* (L), EAT Chabcha *rjap*.

Within the centum branch usually eleven innovations are considered decisive to set the Germanic languages apart from the other branches and one innovation concerns certain changes of the stop system from PIE to Germanic and are known as Grimm’s Law. It describes three kinds of changes, the PIE voiced stops changed into voiceless stops, e.g. **dekm*, Gothic *taihun* ‘ten’, the voiceless stops changed into voiceless fricatives, e.g.

**treies*, Gothic *þreis* ‘three’, and the voiced aspirated stops changed into voiced fricatives and finally into plain voiced stops, e.g. **bher-*, Gothic *bair-* ‘to carry, bear’. These changes are considered generally valid and therefore basically unconditioned. For example, the development of **d-* > Germanic **t-* does not work only initially as just shown but also internally, cf. full grade **sed-* ‘to sit’ > Gothic *sitan* or zero-grade **ni-sd-o-* ‘where the bird sits down’ = ‘nest’ > Old High German nest. The same is with **t* > Germanic **þ*, for internal change cf. **bhrātēr* (< *bhreh₂tēr*) ‘brother’ > Gothic *broþar*. There are certain exceptions, which are well defined however. As shown above, final **-t* is dropped according to the Germanic *Auslautgesetze* and **t* preceded by **s* did not change, cf. **h₂ster-* ‘star’ > Gothic *stair-nō*. A third case is the famous Verner’s Law, explaining a previous exception to Grimm’s Law, saying that the Germanic voiceless fricatives resulting from voiceless stops became voiced in medial or final position if the PIE free word accent did not immediately precede, e.g. **ph₂tēr* ‘father’ (> **fap₂ēr* > **fa₂tēr*) > Gothic *fadar* [*fadār*] vs. **bhréh₂tēr* (> **bhrātēr* > **brōþēr*) > Gothic *broþar* [*brōþar*].

If we treat the WT stop system including the affricates in this manner, the outcome will be a bit meagre. Considering the simple stops and affricates in *CV*-position, we will find that the plain voiceless stops and affricates did not change. But an important point in this context is that there are very few examples for this position. The voiceless aspirated stops and affricates did not change either in this position. Only the plain voiced stops and affricates show devoicing in most dialects, in tonal dialects connected with low tone, and in certain CT dialects, e.g. in the dialects of Lhasa and Shigatse, the devoiced stops and affricates have become aspirated. And again there are only few examples with originally plain voiced affricates in this position. Looking through the records in more detail, we find a complete regular devoicing in all dialects with the exception of certain WAT dialects, and in Amdo Tibetan WT initial *b-* has become *w-*. In the WAT dialects the process of devoicing is apparently still in progress. Going from west to east we still encounter voiced stops in Baltistan and Lower Ladakh. The main variation between voiced and devoiced stops is found in Central Ladakh with the capital Leh. In the WIT dialects farther east in Upper Ladakh and Indian Changthang and to the south in Tabo as well as in the Central Tibetan dialects beyond the Indian border in neighbouring Ngari the devoicing process is completed and the sound change has become completely regular. To give a few examples: Initial *b-* in WT *bu mo* ‘girl, daughter’ is still voiced in the western dialects of WAT, cf. Balti *boŋo* and Purik of Kargil *bomo*, further east in Leh, however, we have *pomo* like in many other dialects, cf. *pomo* (L-H) in the WIT dialects of Zanskar,

Trangtse and Tabo as well as in the CT dialect of Kyirong, but *p^humo* (L-H) in Shigatse. Southern Tibetan (ST) Dzongkha, the official language of Bhutan, has *pum* (L) and the Kham dialect of Bathang (TBL) *pā:mo* (L-H). Only Amdo Tibetan differs with initial *w-*, cf. Themchen *wəmu* and Arik (TBL) *womo*. Lexical exceptions like WT *bul* (*tog*) ‘baking soda’, for which we find *pul* all over WAT, can easily be explained by the fact that this soda was imported from Ladakh, and with the object also the name has been imported. For WT initial *g-* cf. WT *gos* ‘clothes, dress’ > Balti *gos* ‘woollen cloth’, but Leh *kos* ‘gown’, Tabo *kø:* (L) ‘id.’, Dingri *k^hø:* (LF) ‘clothing’, Dzongkha *ko:* (L) ‘id.’, Bathang (TBL) *kø:* (L) ‘id.’, Themchen *ki* and Arik (TBL) *ku* ‘satin fabric’. For WT initial *d-* cf. WT *dar ba* ‘buttermilk’ > Balti *darba*, but Leh *tara*, Tabo and Kyirong *tara* (L-H), Shigatse *t^hara* (L-H), Dzongkha *ta:u* (L), Derge *tara* (L-H), Themchen *tara*. However, if WT *d-* is followed by *u*, the devoicing has reached all WAT dialects, cf. WT *dug* ‘poison’ in all WAT dialects *tuk*, WT *dus* ‘time’ in all WAT dialects *tus*, and WT *dud pa* ‘smoke’ in all WAT dialects *tutpa*.

The picture of consonantal sound changes is getting considerably richer when we switch from the plain initial stops to the initial clusters. Repeating the fact that the usual syllable in Tibetan is not characterized by **Ce-* or **CR-* like in PIE but by *CC(R)V-*, where the consonants of the cluster interact with each other considerably when changing, it is necessary to drop the idea of describing the change of single consonants and to describe the change of the consonant clusters as a whole. This leads to the consequence that conditioned consonant change is the clearly dominating form of change in Tibetan. It is of course impossible to present the whole picture here, and I will restrict myself to illustrate the diverse and partly far-reaching changes by the presentation of selected changes of *CC*-clusters with an initial stop preceded by a simple (pre- or superscribed) prefix. At the first glance, it seems difficult to describe the changes of the many possible and occurring cluster formations systematically. To make this easier we have to take into account the empirical observation that the prefixes can be grouped into two classes, oral and nasal prefixes, firstly because they occur in complementary distribution with the voiceless and voiceless aspirated stops, and secondly because the results of the changes of the clusters with oral and nasal prefixes are more similar and better comparable among each other.¹⁷ In doing this, we can establish a stop system with seven main series for WT as a basis to describe the consonant changes in Tibetan from WT to the modern spoken varieties. As mentioned earlier, we find *g*, *d*, *b*, *m*, ‘*a-chuñ*’ (graphically represented by an apostrophe) as prescripts and *r*, *l*, *s* as superscripts in prefixed position with the restriction that *m* cannot precede

the labial stops. Of these *m* and *'a-chuñ* count as nasal prefixes (abbr. as N), the rest as oral prefixes (abbr. as O).

As noted previously, the PIE stop system consists of five members each (labial, dental, palatal, velar, labiovelar) of the three series (voiceless, voiced, voiced aspirated) and the Germanic stop system is reduced by one according to Grimm's Law, cf.

Table 1. PIE stop system

p	b	b ^h
t	d	d ^h
k	g	g ^h
k ^w	g ^w	g ^{wh}

Table 2. Germanic stop system

f	p	þ
þ	t	d
x	k	g
x ^w	k ^w	g ^w

The WT stop system consists of three members each (labial, dental, velar) of three series (voiceless, voiceless aspirated, voiced), if we only count the plain stops, cf.

Table 3. WT system with plain stops

p	ph	b
t	th	d
k	kh	g

It consists of seven series (voiceless, voiceless with oral prefixes, voiceless aspirated, voiceless aspirated with nasal prefixes, voiced, voiced with oral prefixes, voiced with nasal prefixes), if we count the *CC*-clusters, cf.

Table 4. WT system with *CC*-cluster stops

p	Op	ph	'ph	b	Ob	'b
t	Ot	th	Nth	d	Od	Nd
k	Ok	kh	Nkh	g	Og	Ng

We must keep in mind, however, that the *CC*-cluster system is still a simplification as it does not take into account all subtle changes in the modern *cluster dialects*, i.e. in WAT and in Amdo Tibetan where initial consonant clusters are still preserved, due to different developments within the series with oral prefixes and even within the series with nasal prefixes. This prefixation with nasal prefixes occurring with voiceless aspirated and voiced stops is also called *prenasalization*.

In Amdo Tibetan, all seven series of the WT system are maintained. The main change in contrast to the WT system is that the plain voiced series became voiceless. Minor changes are WT *p-* and *b-* > *w-*, and WT *ph-* > *h-*.

In some Amdo dialects prenasalization with the voiceless aspirates is not stable, cf.:

Table 5. WT and Amdo stop systems

WT	p	Op	ph	'ph	b	Ob	'b
Amdo	w	Op	h	(m)p ^h	w	Ob	mb
WT	t	Ot	th	Nth	d	Od	Nd
Amdo	t	Ot	t ^h	(N)t ^h	t	Od	nd
WT	k	Ok	kh	Nkh	g	Og	Ng
Amdo	k	Ok	k ^h	(N)k ^h	k	Og	Ng

The examples showing the changes are from the Amdo dialects of Ndzorge, Rkangtsha and Themchen: WT *pañ* > Ndzo *waj* 'lap'; WT *phabs* > Rka *hap* 'yeast'; WT *bu mo* > The *wəmu* 'girl', WT *dug* > The *təç* 'poison', WT *gos* > The *ki* 'satin fabric'.

In WAT, phonemic prenasalization is generally dropped and the plain voiceless aspirated series and the nasal-prefixed voiceless aspirated series have merged in the plain voiceless aspirated series. Thus, only six of the seven WT series are maintained. As already seen above, the plain voiced series became in part voiceless, and the nasal-prefixed voiced series became plain voiced, cf.:

Table 6. WT and WAT stop systems

WT	p	Op	ph, 'ph	b	Ob	'b
WAT	p	Op	p ^h	b/p	Ob	b
WT	t	Ot	th, Nth	d	Od	Nd
WAT	t	Ot	t ^h	d/t	Od	d
WT	k	Ok	kh, Nkh	g	Og	Ng
WAT	k	Ok	k ^h	g/k	Og	g

The examples are from the WAT dialects of Khalatse and Nurla: WT *'phañ* > Khal *p^hañ* 'spindle', WT *mthil* > Khal *t^hil* 'bottom', WT *'thad po* > Khal *t^hatpo* 'happy', WT *mkhas pa* > Khal *k^haspa* 'learned person', WT *'khur thag* > Khal *k^hurt^hak* 'rope for tying load'; WT *bu mo* > Kar *bomo*, Leh *pomo* 'girl, daughter', WT *dar ba* > Kar *darba*, Leh *tara* 'buttermilk', WT *gos* > Kar *gos* 'clothes', Leh *kos* 'gown'; WT *'bu* > Khal *bu-tsik* 'insect', WT *mda'* > Khal *da* 'arrow', WT *'di* > Khal *di* 'this', WT *mgar ba* > Khal *garba* 'blacksmith', WT *'gan* > Nur *gan* 'responsibility'.

The cluster dialects of Amdo Tibetan and of WAT are characterized by the lack of phonemic tone. All other dialects lack initial clusters¹⁸ but have, with one exception, a two-fold tone system, high vs. low register, or a four-fold tone system, high vs. low and level vs. non-level (mainly falling) reg-

ister. Some of them maintain voicedness as a phonemic feature. The dialects of WIT and Kham Tibetan belong to these, where the plain voiceless and the oral-prefixed voiceless series have merged in plain voiceless series accompanied by high tone (H), and the plain voiceless aspirated and the nasal-prefixed voiceless aspirated series have merged in the plain voiceless aspirated series also accompanied by high tone (H). Thus, the seven WT series are further reduced to five.¹⁹ The WT plain voiced series has become devoiced, the oral-prefixed voiced series has become plain voiced and the nasal-prefixed voiced series remained voiced with prenasalization. These three originally voiced series are accompanied by a low tone (L),²⁰ cf.:

Table 7. WT, WIT and Kham stop systems

WT	p, Op	ph, 'ph	b	Ob	'b
WIT, Kham	p (H)	p ^h (H)	p (L)	b (L)	mb (L)
WT	t, Ot	th, Nth	d	Od	Nd
WIT, Kham	t (H)	t ^h (H)	t (L)	d (L)	nd (L)
WT	k, Ok	kh, Nkh	g	Og	Ng
WIT, Kham	k (H)	k ^h (H)	k (L)	g (L)	ŋg (L)

The examples showing the changes are from WIT Tabo: WT *spu* > Tabo *pu* (H) 'body hair', WT *rta* > Tabo *ta* (H) 'horse', WT *skar ma* > Tabo *karma* (H-H) 'star'; WT *'phreñ ba* > Tabo *t^hanja* (H-H) 'rosary', WT *mthe bo* > Tabo *t^heo* (H-H) 'thumb', WT *'thad* > Tabo *t^hat* (H) 'wish', WT *mkhas pa* > Tabo *k^hewa* (H-H) 'learned person, expert', WT *'khur thag* > Tabo *k^hut^hak* (H-H) 'rope for tying load'; WT *bu mo* > Tabo *pomo* (L-H) 'girl, daughter', WT *dan po* > Tabo *tanpo* (L-H) 'first', WT *gos* > Tabo *kø*: (L) 'gown, clothing'; WT *sbal pa* > Tabo *belwa* (L-H) 'frog', WT *bden pa* > Tabo *denpa* (L-H) 'truth', WT *dgu* > Tabo *gu* (L) 'nine'.

The CT dialect of Kyirong also belongs here. It has kept five series like in WIT and Kham Tibetan by keeping apart the three series with originally voiced stops, but the realization of these series is different. Kyirong has a three register tone system: high (H), middle (M) and low (L) tone. "The middle tone is spoken with modal voice and a slightly rising contour. Low tone syllables also have a slightly rising contour, but are produced with breathy or at least lax voice (depending on the speaker)." (Huber 2005: 20). The WT plain voiced stops are devoiced and the syllable is pronounced with middle tone. The WT oral-prefixed voiced stops are also devoiced with low tone. And the WT nasal-prefixed voiced stops remain voiced with middle tone, e.g. WT *do* > Kyir *to* (M) 'two', WT *rdo* > Kyir *to* (L) 'stone', WT *mdo* > Kyir *do* (M) 'lower valley'.

As far as I can see, all other CT dialects and ST Dzongkha have reduced the seven WT series to four, mostly by merging the WT oral-prefixed and the WT nasal-prefixed voiced series into one by dropping all prefixes. This happened in ST Dzongkha and CT Jirel, which have maintained phonemic voicedness. In these dialects the merger resulted in a plain voiced series with low tone. The plain voiceless and the oral-prefixed voiceless series as well as the plain voiceless aspirated and the nasal-prefixed voiceless aspirated series behave like in WIT and Kham Tibetan. The situation in Southern Mustang is less clear.²¹ Jirel shows a peculiarity, as the devoiced series from the WT plain voiced series has developed an additional aspiration accompanied by low tone,²² cf.:

Table 8. WT, Dzongkha and Jirel stop systems

WT	p, Op	ph, 'ph	b	Ob, 'b
Dzo, Jir	p (H)	p ^h (H)	p, p ^h (L)	b (L)
WT	t, Ot	th, Nth	d	Od, Nd
Dzo, Jir	t (H)	t ^h (H)	t, t ^h (L)	d (L)
WT	k, Ok	kh, Nkh	g	Og, Ng
Dzo, Jir	k (H)	k ^h (H)	k, k ^h (L)	g (L)

The examples showing the changes of the WT voiced series are from ST Dzongkha and CT Jirel: WT *bu mo* > Dzo *pum* (L), Jir *p^humo* (L-H) 'girl, daughter', WT *dug* > Dzo *tu:* (L), Jir *t^huk* (L) 'poison', WT *gos (lag)* > Dzo *ko:* (L) 'male garb', Jir *k^holak* (L-H) 'cloth, clothing'; WT *sbal pa* > Dzo *bɛ:p* (L), Jir *balbak* (L-H) 'frog', WT *bdun* > Dzo *dy:n* (L), Jir *duin* (L-H) 'seven', WT *dgu* > Dzo, Jir *gu* (L) 'nine'; WT *'bu (pa)* > Dzo *bup* (L), Jir *bu* (L) 'insect', WT *mduñ* > Dzo *dü:* (LF), Jir *duñ* (LF) 'sting', WT *mgo* > Dzo *gu* (L), Jir *go* (LF) 'head'.

The same process, merging the WT oral-prefixed and the WT nasal-prefixed voiced series into one by dropping all prefixes, occurred in other CT dialects like in the dialects of Lhasa, Shigatse, Dingri and the Western Drokpas, but with the difference, that the devoicing has been completed. Thus, there is no voicedness distinction any more in these dialects. The plain voiceless and the oral-prefixed voiceless series as well as the plain voiceless aspirated and the nasal-prefixed voiceless aspirated series again behave like in WIT and Kham Tibetan. And they also show the peculiarity we have seen in Jirel, the WT plain voiced series has not only become devoiced with low tone but also has developed aspiration, cf.:

Table 9. WT and Shigatse stop systems

WT	p, Op	ph, 'ph	b	Ob, 'b
Shi, etc.	p (H)	p ^h (H)	p ^h (L)	p (L)
WT	t, Ot	th, Nth	d	Od, Nd
Shi, etc.	t (H)	t ^h (H)	t ^h (L)	t (L)
WT	k, Ok	kh, Nkh	g	Og, Ng
Shi, etc.	k (H)	k ^h (H)	k ^h (L)	k (L)

The examples showing the changes of the WT voiced series are from CT Shigatse: WT *bu mo* > Shi *p^humo* (L-H) 'girl, daughter', WT *drug* > Shi *tʂ^huk* (L) 'six', WT *ga gi* > Shi *k^haki* (L-H) 'which'; WT *shal pa* > Shi *pa:pa* (L-HF) 'frog', WT *bdun* > Shi *tʃ̃* (L) 'seven', WT *dgu* > Shi *ku* (L) 'nine'; WT 'bu > Shi *pu* (L) 'insect', WT *mdud pa* > Shi *tʃpa* (L-H) 'knot', WT 'dre > Shi *tʂe* (L) 'demon', WT *mgo* > Shi *ko* (L) 'head', WT 'gan > Shi *kiẽ* (L) 'responsibility'.

Finally, in a group of CT dialects spoken in Ngari (Ruthok, Gar, Gergeye, Purang, Tshochen), the development of the seven WT stop series is very similar to the preceding CT group. They are also reduced to four and voicedness no longer exists phonemically. The plain voiceless and the oral-prefixed voiceless series as well as the plain voiceless aspirated and the nasal-prefixed voiceless aspirated series again behave as in WIT and Kham Tibetan. The difference lies in the merger of the originally voiced series. Instead of merging the WT oral-prefixed and the WT nasal-prefixed voiced series into one, the WT oral-prefixed voiced series has merged with the WT plain voiced series into a plain unvoiced series with low tone and the WT nasal-prefixed voiced series became devoiced but kept the prenasalization. A further difference is that the WT plain voiced series has become devoiced with low tone but did not develop aspiration, cf.:

Table 10. WT and Ngari stop systems

WT	p, Op	ph, 'ph	b, Ob	'b
Ngari	p (H)	p ^h (H)	p (L)	np (L)
WT	t, Ot	th, Nth	d, Od	Nd
Ngari	t (H)	t ^h (H)	t (L)	nt (L)
WT	k, Ok	kh, Nkh	g, Og	Ng
Ngari	k (H)	k ^h (H)	k (L)	nk (L)

The examples showing the changes of the WT voiced series are from CT Ruthok: WT *bu mo* > Ru *pomo* (L-H) 'girl, daughter', WT *drug* > Ru *tʂu?* (L) 'six', WT *gan bu* > Ru *kaĩ:* (L-H) 'pod'; WT *shal pa* > Ru *palpa* (L-H) 'frog', WT *bdun* > Ru *tʃ̃:* (L) 'seven', WT *dgu* > Ru *ku* (L) 'nine'; WT 'bu

> Ru *npu* (L) ‘insect’, WT *mdud pa* > Ru *ntyʔpa* (L-H) ‘knot’, WT *'dod pa*
 > Ru *ntøpa* (L-H) ‘wish’, WT *mgo* > Ru *nko* (L) ‘head’, WT *'gyod pa* > Ru
ncøpa (L-H) ‘regret’.

In general, we can say that the number of stop series are reduced from seven in WT to four in CT and ST. The least functional load in this respect is on the distinction between plain and prenasalized voiceless aspirated stops. The distinction is only kept in most Amdo dialects and in some Kham dialects. The main changes concerned the three series of voiced stops in WT (plain, oral-prefixed, nasal-prefixed). They are preserved in Amdo and Kham Tibetan in the east and in WAT and WIT in the west. In ST and CT they are usually reduced to two by merging oral-prefixed and nasal-prefixed voiced stops, rarely by merging the plain and oral-prefixed voiced stops. A further important change is the gradual desonorisation, first of the plain voiced stops then of the oral-prefixed voiced stops and finally of the nasal-prefixed voiced stops leading to the loss of phonemic voicedness. These changes are balanced by the development of phonemic tone and by aspiration connected with low tone.

4. Conclusion

In applying the comparative method to sound change phenomena in IE and Tibetan, it became evident that syllable structure in both language families plays an eminent role. In contrast to word structure and word formation, the syllable structure of WT appears to be more complicated than in PIE, especially due to the syllable-initial consonant clusters consisting usually of two and not rarely even three consonants, which influence each other with respect to sound change. This is the most important factor characterizing sound change from Old and Classical Tibetan down to the modern spoken dialects of today. The other important factor with respect to sound change is that the simple vowel of a syllable usually changes under the influence of a following final consonant implying also change or loss of this consonant, so that vowel and consonant changes cannot be separated from each other. Both factors show that in contrast to PIE and IE languages, where unconditioned sound change is prevailing, in Tibetan most sound changes are conditioned changes. Given the additional fact that especially simple voiceless initials stops are rare in Tibetan, it all leads to the insight that a description of the Tibetan stop system in analogy to the PIE or, e.g., Germanic stop system, describing the single, usually initial stops, does not reveal much on the sound history of Tibetan. In Tibetan, only the

description of the initial *CC*-clusters as the basic unit in the stop system allows one to recognize the eminent changes which the systems of the modern dialects have undergone. If we start from the WT system with plain stops, we get three series (voiceless, voiceless aspirated, voiced), similar to the PIE stop system also with three series (voiceless, voiced, voiced aspirated). But if we start with the initial *CC*-clusters as the basic unit we obtain seven series in the WT stop system, which are kept in Amdo Tibetan, reduced to six in WAT, further reduced to five in WIT and Kham Tibetan, and again reduced to four in Central and Southern Tibetan. And it may be interesting to note that among the three members unvoiced, unvoiced aspirated and voiced, the voiced members have undergone the greatest changes.

Appendix: Tibetan dialects – abbreviated preliminary classification

This classification uses linguistic and geographic criteria as well as native classification conceptions. It represents, to a certain extent, the genetic affiliations between the varieties. The linguistic criteria are mainly based on sound change phenomena. Included are only varieties mentioned in the text. So far unpublished data are from fieldwork mainly by Felix Haller (Shigatse, Amdo and Kham Tibetan), Veronika Hein (Tabo) and myself (WAT, Trangtse) as well as from published sources (quoted in brackets). All data will be published in the Comparative dictionary of Tibetan dialects (CDTD).

WAT Western Archaic Tibetan (Baltistan, Ladakh)

Balti dialects in Baltistan: Skardo, Khaplu

Purik dialects in Lower Ladakh: Kargil, Tshangra, Chiktan

Ladakhi dialects of Sham and Zhung: Khalatse, Nurla, Leh

WIT Western Innovative Tibetan (Ladakh, NW India, Tibet Ngari area)

Ladakhi dialects of Zanskar, Stot (or Ken) and Indian Changthang: Trangtse

Indian Border Area dialects, dialects of Spiti: Tabo (Hein)

Ngari dialect of Tholing (Tuolin) or Tsanda (Zhada) (Qu and Tan 1983)

CT Central Tibetan (Tibet Ngari and Shigatse areas, Lhasa municipality, Nepal)

Ngari dialects of Ruthog (Ritu) and Tshochen (Cuoqin): Ruthok, Gar, Gergye, Purang, Tshochen (all Qu and Tan 1983)

Tsang and Ü dialects: Western Drokpa (Kretschmar 1986), Kyirong-Lende (Huber 2005), Dingri (Dingri) (Herrmann 1989), Shigatse town (Xigazê) (Haller 2000), Lhasa (Lasa) (Qu and Tan 1983)

Dialects of Nepal: Southern Mustang (Kretschmar 1995), Yolmo or Helambu Sherpa (Hari and Chhegu Lama 2004), Jirel (Strahm and Maibaum 2005)

ST Southern Tibetan (Sikkim, Bhutan): Dzongkha (Bhutan) (van Driem 1998)

EKT Eastern Kham Tibetan (Chamdo, Sichuan, Yunnan): Derge (Dege), Bathang (Batang) (TBL 1992), Lithang (Litang), Dartsedo (Kangding)

EAT Eastern Amdo Tibetan (Qinghai, Gansu, Sichuan): Themchen (Tianjun) (Haller 2004), Mkharmar (Qilian), Rkangtsha (Gangcha), Arik (Alike) (TBL 1992), Chabcha (Gonghe), Rgangya near Labrang (Ganjia near Xiahe), Rngaba (Aba), Ndzorge (Ruo'ergai) (Sun 1986), Rmastod (Maduo), Mdzorganrabar (Huashixia)

Notes

1. With this little contribution I want to express my sincere gratitude to my long-standing and close colleague Iwar Werlen at the Institute of Linguistics at Bern University. Within the IE languages, I tried to put emphasis on the Germanic languages as they also belong to his diverse fields of research. And I am also grateful to him that he not only put up with my Tibetan studies, but supported them whenever possible, though they do not belong to his research interests.
2. Because even the modern written language still uses the orthography of Classical Tibetan, I use the neutral term Written Tibetan (WT) in this paper. Only in cases where Old Tibetan written forms differ significantly with respect to the discussed items, the term Old Tibetan will be used.
3. *V* = vowel, *C* = consonant; *CV* occurs marginally with particles like enclitic **k^we* 'and' and some pronominal forms like **mĕ*, enclitic **me* 'me'.
4. The roots are often written with the *s* in parentheses: **(s)pek-*, **(s)teg-*.
5. There are two letters in Tibetan writing, called *a-chen* and *'a-chuñ*, whose phonetic backgrounds in Old and Classical Tibetan are not fully clear. They occur syllable-initially and do not enter into cluster formation. Probably, *a-chen* represented a syllable initial glottal stop and *'a-chuñ* was perhaps only a graphic sign to indicate that the syllable had no initial consonant but started with the vowel. In certain modern CT varieties, however, initial *'a-chuñ* left a trace, as the syllable is realized with a voiced onset and low register tone. In Kyirong Tibetan, for example, this voiced onset has phonemic status as well as of course the low register tone. In contrast, hard voice onset, corresponding to *a-chen*, has no phonemic status, but is always connected with phonemic high register tone (cf. Huber 2005: 32).
6. Cf. note 5.
7. Diminutive formations in WT like *bye-u* 'little bird' < *bya* 'bird' with the suffix *'u* < *bu* 'boy, son, child' or < *'bu* 'insect' are considered disyllabic.
8. For a list of the Tibetan dialects and their subgrouping cf. the appendix.

9. This admirable insight into the linguistic structure is not only shown by its representation in the graphic structure of the syllable but to some extent it is also present in the two earliest and pre-classical grammatical treatises, attributed by the indigenous tradition to the legendary Thon-mi Sambhoṭa, minister under the king Srong btsan sgam po (618-649?) and creator of the Tibetan script. Especially important with respect to the initial consonant clusters is the second treatise entitled *rtags kyi 'jug pa* 'the instruction of adding the (characteristic) signs', cf. Verhagen (1994: 189, 209–210).
10. The Tibetan grammarians were wrong only in the case of clusters with subscribed *l*, where *l* is the initial and the consonant written as initial is the immediately preceding prefix. A special case is the cluster *lh-* with *h* as initial and *l* as superscript. In many modern varieties we find voiceless initial *l̥* corresponding to WT *lh-* and we may assume that *l̥-* already existed at the time of the establishment of the Tibetan writing system and *hl-* was the attempt to put this into writing.
11. For an overview see Meier-Brügger (2002: 286–295).
12. With the exception of Western Archaic Tibetan (WAT) and Eastern Amdo Tibetan (EAT) or simply Amdo Tibetan, the Tibetan dialects have developed a phonemic tone system for the initial syllable of a word. There are mainly two types. One distinguishes between high and low register syllables, they are marked here by a following (H) or (L) respectively. The other type in addition to the distinction between (H) and (L) distinguishes also between a level or non-falling and a non-level or falling contour tone. Only the falling tone is marked here as (F). For the first type cf. e.g. the Central Tibetan (CT) dialect of Southern Mustang *so* (H) 'tooth' and *so* (L) 'eat!' and for the second type the CT dialect of Shigatse *ta* (H) 'horse', *ta* (L) 'arrow', *ta* (HF) 'tiger' and *ta* (LF) 'I (elegant speech)'.
13. There is only one source in the Comparative dictionary of Tibetan dialects (CDTD) within the 67 recorded varieties which regularly gives the change of *o* > *u* in this position, i.e. Kham Tibetan of Bathang (TBL) with *lu* (L) 'year', *su* (H) 'tooth', *rdu* (H) 'stone', *gu* (H) 'door'.
14. In the Dzongkha dialect alongside with *me* (L) for 'fire' we also find *mi* (L). In certain CT and EKT varieties the word for 'tongue' has added an unclear second syllable. Therefore, original final *-e* became internal, cf. e.g. CT of Shigatse and EKT of Bathang *tee-le* (H-H).
15. For Amdo Tibetan cf. Themchen: *mnə* 'man', *bzə* 'four', *tə^hə* 'dog', *təə* 'knife' or *tə^hə* 'water', *ptəə* 'ten', *s^hə* 'who', *ylə* 'song'. And for the different developments in Kham I quote the recordings from Derge and Bathang including Bathang (TBL): De *ne* (H), Ba *me* (H), Ba (TBL) *mə* (H) 'human being, man', De *γə* (H), Ba *je* (H), Ba (TBL) *γə* (H) 'four', De *tə^he* (H), Ba *tə^he* (H), Ba (TBL) *tə^hə* (H) 'dog', De *l̥sə* (L), Ba *l̥se* (L), Ba (TBL) *l̥sə* (L) 'knife' or De *tə^hu* (H), Ba *tə^ho* (H), Ba (TBL) *tə^hu* (H) 'water', De *təə* (H), Ba *təo* (H), Ba (TBL) *təu* (H) 'ten', De *s^hu* (H), Ba *s^ho* (H), Ba (TBL) *su* (H) 'who', De *lə* (H), Ba *lo* (H) 'song'.

16. This terminal devoicing of final dental, labial and velar plosives resembles a similar process which took place from Old to Middle High German leading to the neutralization of the original phonological opposition between voiced and unvoiced stops in final position. In WT only voiced stops may occur in final position, and in those dialects where the final stops are kept till today they are realized unvoiced with delayed release. Apparently, in Tibetan the three kinds of stops are also neutralized and reduced to one kind in final position, probably voiced in WT and unvoiced in the dialects today.
17. For this concept of prefix classification cf. Róna-Tas (1966: 106–108, and especially 184–186).
18. Slight exceptions are CT Kyirong and some closely related CT varieties in Nepal (Kagate, Yolmo, Tsum, Langtang) which kept initial labial stop followed by *r*, e.g. WT *'bras* ‘rice’ > Kyirong *bre:* (LF), and ST Dzongkha, which kept initial labial stop followed by *y* as labial followed by *tɛ*, e.g. WT *bya* ‘bird’ > Dzongkha *ptɛa* (L). Slight exceptions are also some WIT dialects like the Ladakhi varieties of Zanskar or Trangtse, where *ld-* and *lt-*clusters are still found. In addition to that the Zanskar varieties have no phonemic tone.
19. In certain Kham dialects, voiceless prenasalization may occur with the voiceless aspirates, e.g. in Derge. But in the Bathang (TBL) records compiled by Kesang Gyurme, a distinguished linguist and native speaker prenasalization never occurs. And with initial labial voiceless aspirated stops we find variation with and without prenasalization already in WT.
20. In certain Kham dialects, voiced initial stops going back to WT oral- and nasal-prefixed voiced stops have unexpected high tone, cf. Haller (1999).
21. In Southern Mustang phonemic voicedness is not completely lost. Usually the correspondences to the WT nasal-prefixed voiced initial stops have kept their voicedness, but exceptions are not rare. Exceptions to the devoicing of the correspondences to the WT oral-prefixed voiced initial stops, however, are very rare. Thus, Southern Mustang seems to belong to a type with a different merger. In this dialect like, e.g., in the CT dialect of Yolmo in Nepal, the WT oral-prefixed voiced initial stops and the plain voiced initial stops have merged into a plain voiceless series. In contrast, the WT nasal-prefixed voiced initial series remained voiced but lost the prenasalization.
22. This additional aspiration seems “superfluous”, as it is a second distinctive feature in addition to voicedness distinction. This is different to CT dialects like Shigatse, where phonemic voicedness is lost and the aspiration of the devoiced stop is the only distinctive feature, cf. below.

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Etyma, shouldered adzes and molecular variants

George van Driem

1. Promise and peril in prehistory

The prospect of reconstructing lost chapters of prehistory through interdisciplinary research thrills and tantalises. The epistemological limitations of combining insights from linguistics, archaeology, palaeobotany, paleoclimatology and genetics are occasionally pointed out. In the absence of writing, potsherds do not speak any particular language, nor does any molecular variant on the genome represent an absolute marker that its bearers in prehistory spoke a language belonging to some particular linguistic phylum. The links between language and palaeobotany and between linguistics and palaeoclimatology appear to be even more tenuous.

Yet scholars who have ventured gingerly to compare and correlate findings from disparate disciplines have come up with bold inferences and fascinating reconstructions of prehistoric pasts. Instead of a contrite sermon on the methodological dangers of constructing arguments on the basis of apparent correlations between heterogeneous sets of data which may in fact not be related at all, let us showcase instead a few interesting examples of where interdisciplinary research in one particular region of Asia has led to the construction of competing models of the past, some of which at times skirt the epistemological abyss.

2. A centre of gravity which now carries more weight

The Austroasiatic language family has over 100 million speakers today, predominantly thanks to just a few languages with numerous speakers such as Vietnamese, Khmer, Santhali and Khasi. Most of the over two hundred languages of the language family, however, are spoken by small and usually dwindling language communities strewn across a vast area stretching from eastern India across the Indo-Burmese borderlands to the Nicobars, the Malay peninsula, the Mekong delta as far east as Vietnam and adjacent parts of the Chinese province of Yúnnán.

Robert von Heine-Geldern (1917, 1928, 1932) was perhaps the first to argue that the Austroasiatic homeland may have lain on mainland Southeast

Asia, where most Mon-Khmer groups are still found. He argued that the Munda by contrast were racially South Asian indigenes who had been linguistically assimilated by incursive Austroasiatics from mainland Southeast Asia. He also interpreted the spread of what he called the *Schulterbeilkultur* in this light. Archaeology has progressed in the century since this model was first proposed. The shouldered adze or shouldered celt is now known to be just one artefact of a widely diffused technology known as the Hòabinhian industry, and the shouldered adze, taken just by itself, is no diagnostic for any particular Asian cultural complex.

Heine-Geldern's thinking on the spread of Austroasiatic into the Indian subcontinent, supported as it was by language and physical anthropology, may very well have been on the mark. His interpretation of the shouldered adze, however, may not have been correct. The Hòabinhian industry remains important to our understanding of lithic industries in Southeast Asia after the Last Glacial Maximum. Yet the shouldered adze is emblematic for the nature of archaeological argumentation more generally, which, though not inherently epistemologically flawed, generally yields only circumstantial evidence for reconstructing ethnolinguistic population prehistory.

More recently, Gérard Diffloth (2001, 2005) has looked toward the Bay of Bengal littoral and the area surrounding the mouths of the Ganges and the Brahmaputra for a possible Austroasiatic homeland. The most obvious argument in favour of Diffloth's homeland is that this area lies at the family's geographical centre of gravity, based on the distribution of modern Austroasiatic language communities. Recently, Diffloth has strengthened the centre of gravity argument, however, with evidence from linguistic phylogeny. After a decade of entertaining a tripartite division of the family, Diffloth's historical research has brought him back to a fundamental bifurcation of Austroasiatic into a western and an eastern branch. His drastically revised phylogeny of the eastern branch, now renamed Khasi-Aslian, no longer represents the 'Mon-Khmer' of yore. Mon-Khmer is but one branch within Khasi-Aslian.

Furthermore, Diffloth has adduced two additional sets of evidence from the realm of what Adolphe Pictet in 1859 called linguistic palaeontology. The flora and fauna reflected in the reconstructible Austroasiatic lexicon paints the picture of a tropical ecology inhabited by peacocks, tree monitors and binturongs. His reconstructions include the etyma *mra:k 'peacock *Pavo muticus*', *tərkuət 'tree monitor *Varanus nebulosus* or *bengalensis*', *tənyu:ʔ 'binturong *Arctitis binturong*', *(bən)jɔ:l ~ *j(ərm)ɔ:l 'pangolin *Manis javanica*', *dəkan 'bamboo rat *Rhizomys sumatrensis*' (an Aus-

troasiatic root which has found its way into Malay as a loan), *kaciaŋ ‘the Asian elephant *Elephas maximus*’, *kiaε ‘mountain goat *Capricornis sumatrensis*’, *rəma:s ‘rhinoceros *Dicerorhinus sumatrensis*’ and *tənriak ‘buffalo *Bubalus bubalus*’ (Diffloth 2005: 78).

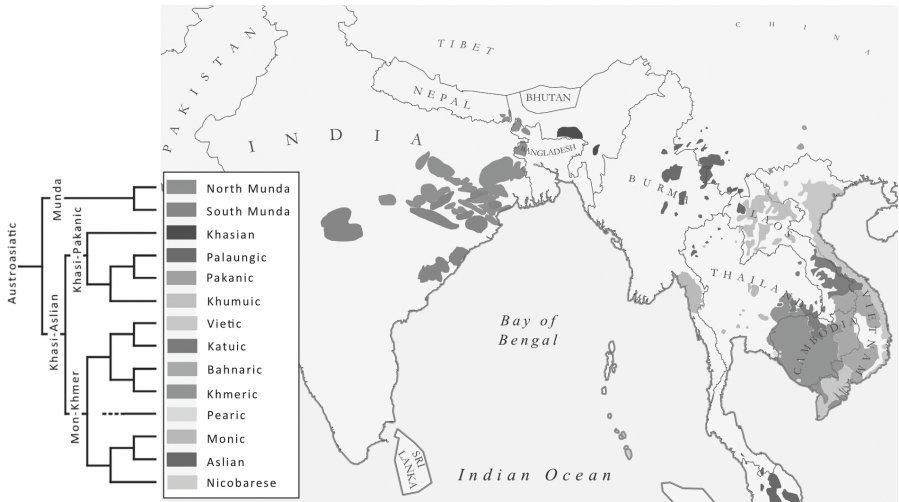


Figure 1. Gérard Diffloth’s revised (2009) Austroasiatic phylogeny and the geographical distribution of Austroasiatic languages, adapted from Chaubey et al. (2010). The two trunks of the Austroasiatic phylum are Munda, in eastern, northeastern and central India, and Khasi-Aslian, which stretches from the Meghālaya in the northeast of the subcontinent to the Nicobars, the Malay peninsula and the Mekong delta in Southeast Asia. The precise phylogenetic position of Pearic within Mon-Khmer remains uncertain.

As I have argued elsewhere (van Driem 2012), the Holocene ranges of species for which Austroasiatic has reconstructible etyma covers a vaster area than would be suggested *prima facie* by the ranges of species named by Diffloth. In fact, some of these faunal habitats are compatible with both Robert von Heine-Geldern’s Austroasiatic homeland and Diffloth’s Austroasiatic homeland. For the Austroasiatic etymon *tərkuət, for example, Diffloth offers both the Bengal tree monitor *Varanus bengalensis* and the clouded tree monitor *Varanus nebulosus* as possible referents. By the same token, the ancient Austroasiatics may have used an etymon such as *rəma:s just as readily to refer to the Indian rhinoceros *Rhinoceros unicornis* or

Javan rhinoceros *Rhinoceros sondaicus* as to the Sumatran rhinoceros *Dicerorhinus sumatrensis*.

When Diffloth's reconstructible Austroasiatic fauna etyma are reassessed in this light, the area of overlap of the possible species denoted by the reconstructible fauna etyma more specifically turns out to cover north-eastern India, the Indo-Burmese borderlands, Burma and Yúnnán. The implication is that the Austroasiatic homeland may not have lain in India proper, but more towards Southeast Asia. On the basis of the reconstructible faunal etyma, the contiguous area comprising upper Burma, the Chinese province of Yúnnán and adjacent portions of northeastern India, northern Thailand and western Laos looks likelier to represent a possible Austroasiatic homeland than either the areas straddling the lower course of the Mekong and surrounding the Mekong delta or the areas straddling the lower course of the Brahmaputra and surrounding the Brahmaputra delta (van Driem 2012).

The second set of linguistic palaeontological data is the reconstructible Austroasiatic vocabulary which robustly reflects terminology pertaining to early rice agriculture, viz. *(kə)ba:ʔ 'rice plant', *rəŋko:ʔ 'rice grain', *cəŋka:m 'rice outer husk', *kəndək 'rice inner husk', *phe:ʔ 'rice bran', *təmpal 'mortar', *jənreʔ 'pestle', *jəmpiər 'winnowing tray', *gu:m 'to winnow', *jərmuəl 'dibbling stick' and *kəntu:ʔ 'rice complement', i.e. accompanying cooked food other than rice (Diffloth 2005). Rice agriculture must have been an early Austroasiatic technology if such terms are reconstructible for all major branches of the Austroasiatic family.¹

Moreover, Ferlus (2010) identifies Proto-Austroasiatic *C.rac as the primordial word for 'rice' and the ultimate source of ancient borrowings to other linguistic phyla, i.e. Proto-Austronesian *beRas, Tibeto-Burman languages, e.g. Tibetan *hbras* and Old Chinese 糲 *bərats, Indo-European, e.g. Sanskrit *vr̥thi*, Hindi *biryānī* (with a suffix), Latin *oryza*, and Dravidian e.g. Tamil *vir̥gi* and *arici*. Ferlus argues that originally Proto-Austroasiatic *C.rac need not have specifically denoted rice because the form is an ancient deverbative of *rac 'to collect by tearing off the grain along the stem with the hand'. Yet such linguistic evidence is best evaluated in light of where rice may have first been domesticated.

3. The absence of evidence is the absence of evidence

In 1883, the director of the botanical garden in Geneva, Alphonse-Louis-Pierre Pyrame de Candolle, argued that the origin of cultivated rice lay in China and that rice was introduced to India from China (1883: 285, 309-311). Nikolai Ivanovič Vavilov (1926) later argued against a Chinese origin for rice and contended instead that the origin of Asian rice lay in India, whence the crop had spread to China and Japan. The controversy continued until molecular genetics was applied to the study of rice. I have discussed the results of recent research in rice genetics and their implications for ethnolinguistic prehistory elsewhere (van Driem 2011). The story can be presented in a nutshell.

Molecular genetic studies have corroborated a view, which is not at all new, that Asian rice appears to have been domesticated twice, if not three times. An eastern domestication of the perennial swamp species *Oryza rufipogon* led to the development of the *japonica* cultivar of *Oryza sativa*. This domestication process involved the proliferation of the mutation *sh4*, which led to the partial development of the abscission zone where the mature grain detaches from the pedicle. The reduced brittleness of the rachides reduced grain shattering. Subsequently, human domestication also favoured genes coding for a whiter grain pericarp (*rc*) and erecter stalks (*Progl*).

Further west, the domestication of *Oryza nivara* led to the development of the *indica* cultivar of *Oryza sativa*. However, *nivara* rice can be described as just an ecotype under a single *Oryza rufipogon* species complex, which encompasses both the annual self-pollinating *Oryza nivara*, adapted to disturbed shallow-water environments, and the perennial *Oryza rufipogon* in the strict sense, best adapted to stable deeper-water environments. Both wild species grow sympatrically and naturally hybridise with each other as well as with cultivated rice. Crucially, the domestication of *indica* rice was facilitated by the introduction of the domesticated traits *sh4*, *rc* and *Progl* into the *nivara* gene pool through introgressive hybridisation involving backcrossing with the previously domesticated *japonica* cultivar.

To simplify matters, the famous *javanica* rice turns out to be just a tropical variety of *japonica* (Figure 2). To make matters more interesting, however, some long-grained aromatic varieties, such as the famous *bāsmati* rice of the Indian subcontinent, likewise derive from the *japonica* domestication event, not from *indica*, whereas Thai jasmine rice is actually an *indica* variety with the fragrant betaine aldehyde dehydrogenase gene *BADH2* introduced by introgression (Garriss et al. 2005, Kovach et al. 2009, Parsons et

al. 1999). By contrast, upland or dry-cultivated rice may represent a distinct, third domestication process. Upland rice is still widely cultivated in the sub-Himalayan hill tracts, where it is known in Nepali as *ghaiyā* and in Dzongkha as *kambjā* ‘dry paddy’. Upland rice has sometimes come to be referred to in the rice genetics literature as ‘aus’, a transmogrified version of Bengali *āus*.

Within the *rufipogon* species complex, the calculated time depth for the divergence of the *rufipogon* ancestor of *japonica* and the *nivara* ancestor of *indica* is in the order of magnitude of 100,000 years. Genome-wide analysis of single nucleotide polymorphisms yields a phylogeny that may suggest an eastern origin of Asian rice within the greater Himalayan region (Purugganan 2010). The date, roughly as old as anatomically modern humans and so long before the invention of agriculture, has also been corroborated by the dating of the divergence of chloroplast DNA (Tang et al. 2004). Whether or not *ghaiyā* represents an independent domestication event, upland rice is genetically more closely affiliated to *indica* than to *japonica* rice. Figure 3 shows likely geographical ranges for the three Asian rice domestications based on the geographical distribution of genetic markers in the wild precursor *Oryza rufipogon*.

Recent phylogenetic evidence has been adduced, purportedly in support of a single domestication of Asian rice some time between 13,500 and 8,200 years ago (Molina et al. 2011). In fact, the presented findings do not exclude the possibility that *indica* and *japonica* rice originated from different *Oryza rufipogon* gene pools. Moreover, the phylogenetic evidence indicates that the wild *rufipogon* population in the region encompassing the Indian Subcontinent and mainland Southeast Asia was ancestral to all domesticated Asian rice, unless the ancestor was some now extinct *rufipogon* population. The evidence adduced by Molina et al. (2011) against multiple domestications of Asian rice is therefore neither complete nor conclusive.

Interpretations invariably hinge upon those key genetic adaptations to agricultural environments that define domestication and so represent salient traits in cultivated Asian rice today. These adaptations appear to have originated in *japonica* rice and been subsequently introduced to *indica* rice by introgression, but it cannot be excluded that wild rice may long have been collected in the vast region encompassing the eastern Himalayas, Yúnnán, northeastern India, the Indo-Burmese borderlands and Burma over long stretches of time before selection for domestication traits began. Moreover, ancient domestication genes native to the *indica* lineage could have gone extinct after the later introduction of *japonica* traits. The *indica* chloroplast

genome diverges enough from *nivara* to suggest that ancient *indica* lineages may have existed and subsequently gone extinct with the preferential westward introduction of *japonica* traits (Takahashi et al. 2008).

Hmong-Mien is a language family of East and Southeast Asia, for which historical linguists have been unable to adduce compelling comparative evidence that would unequivocally link these languages to any other Asian linguistic phylum. I identified the early Hmong-Mien as the original domesticators of *japonica* rice and the ancient Austroasiatics as the original domesticators of *indica* rice (van Driem 2011, 2012). The possibility of contact between the linguistic ancestors of the Hmong-Mien and the early Austroasiatics as well as the diffusion of rice agriculture from the ancient Austroasiatics to the early Hmong-Mien, or vice versa, are a possible implication of this reconstructed prehistoric scenario. The modern distribution of Hmong-Mien language communities is shown in Figure 4, but the ancient Hmong-Mien probably lived along the entire southern Yangtze river basin, where *japonica* rice may first have been domesticated. This model is provocative because the Hmong-Mien have in the course of known history been subject to, or subsumed within, more powerful Sinitic polities, and in recent centuries Hmong-Mien languages have often tended to borrow from Sinitic languages rather than the other way around.

The Hmong-Mien have a reconstructible lexicon of native rice agriculture terms almost as rich as that of the Austroasiatics. Forms taken from Martha Ratliff's handbook on Hmong-Mien historical phonology² include Proto-Hmong-Mien *hnrəŋH 'cooked rice', *hnɔn 'rice head, head of grain', *TuX 'husk/pound rice', *mblut 'glutinous', *ljɪŋ 'paddy field', *ljim 'sickle', *ŋkjuəX 'rice cake', *tsjɛŋH 'rice steamer', *mbləu 'rice plant, paddy', *mphɪk 'chaff', Proto-Hmongic *ntsuw^C 'husked rice', *S-phjæ^C 'chaff', *mbljæ^C 'have food with rice', *ʔrin^A 'dry (rice) in sun', *tshɛŋ^B 'husked rice or millet', *ljɛŋ^A 'rice measure', *ʔjɛŋ 'seedling' and Proto-Mienic *hrau^A 'rice measure', *ʔjaŋ 'seedling' and *hmei^B 'husked rice'. Several of the Hmong-Mien rice etyma entered Sinitic as early loans, and the Proto-Mienic etymon *hmei^B 'husked rice' found its way into both Sinitic and Brahmaputran as well as into Austronesian, where it became the etymon now reconstructible as *Semay 'cooked rice'.

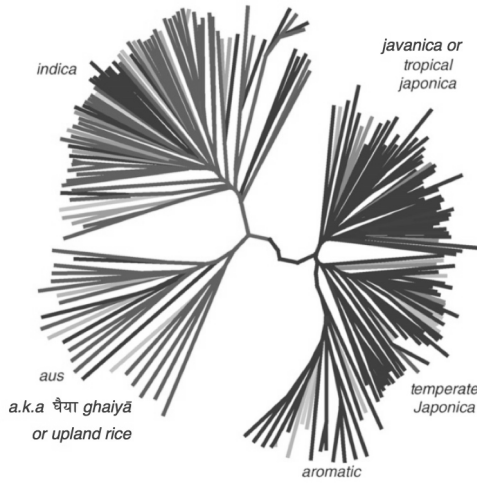


Figure 2. An unrooted phylogenetic tree of the diversity of *Oryza sativa* based on 169 nuclear simple sequence repeats (SSRs) and two chloroplast markers in 234 cultivars of *Oryza sativa*, adapted from Garris et al. (2005), Kovach et al. (2007).

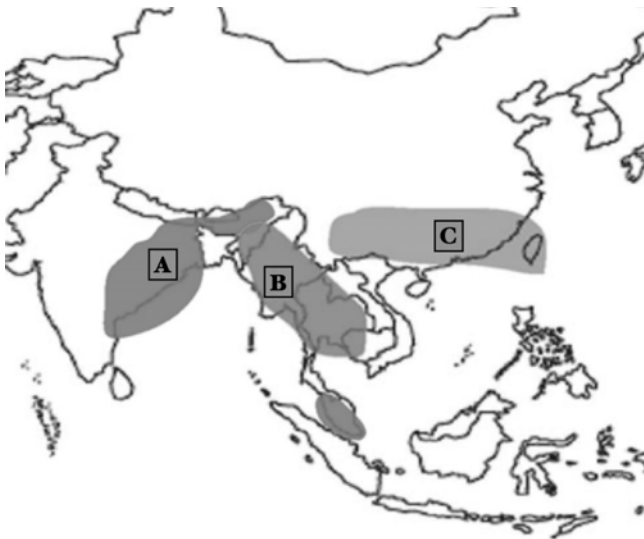


Figure 3. The geographical ranges for the possible domestication of (A) *ghaiyā* or upland rice, (B) wet *indica* rice and (C) the *japonica* cultivar, based on the geographical distribution of genetic markers in the wild precursor *Oryza rufipogon* (adapted from Londo et al. 2006).

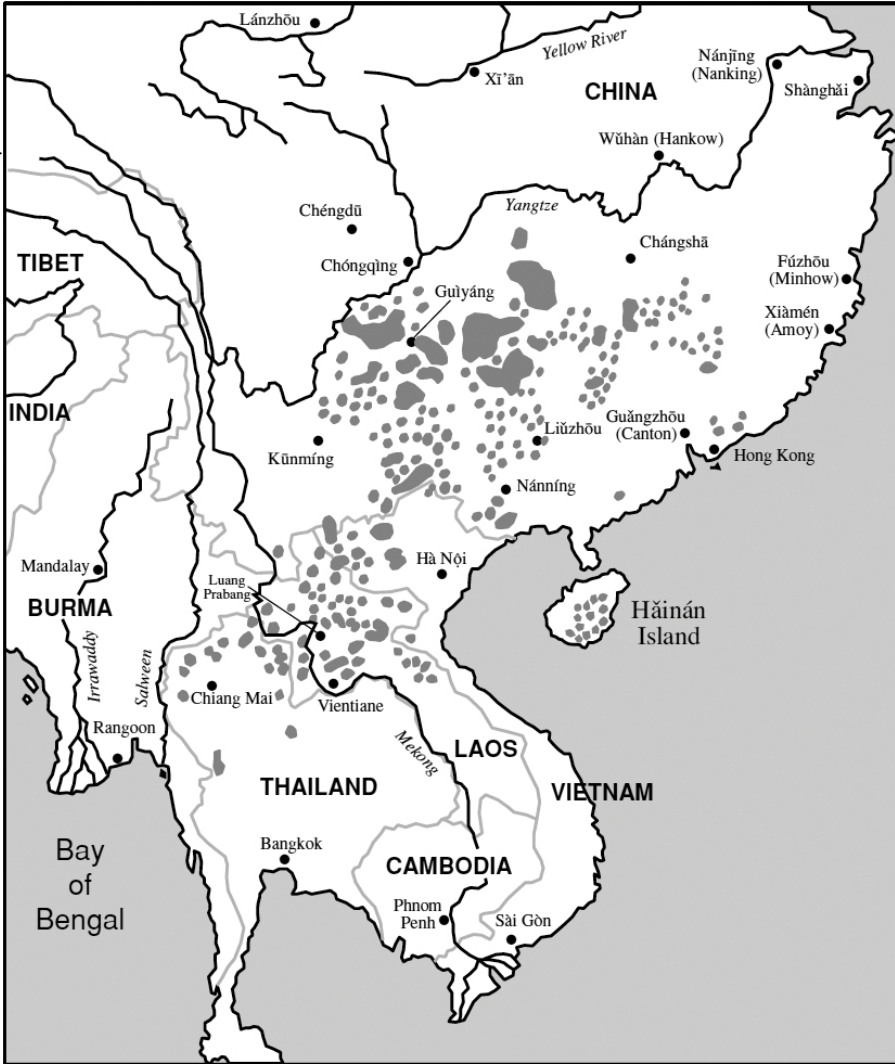


Figure 4. The geographical distribution of modern Hmong-Mien language communities (from van Driem 2001: 319).

All this brings us to the archaeology of rice and an associated empirical quandary. Archaeologists have looked for the remains of early rice agriculture and indeed found them at some sites and not at some others. The recovered remains of early cultivated rice are of differing antiquity and reflect distinct stages of domestication. It is hardly surprising, however, that archaeologists have not found the remains of early rice agriculture in those

places where they have not yet looked. A vast swathe of Asia covering the areas identified by rice geneticists as harbouring the possible sites of domestication of *indica* and upland rice has not been subjected to systematic archaeological and palaeobotanical investigation, particularly the areas surrounding the nexus where ranges A and B overlap (Figure 3).

Fuller concedes the possibility ‘perhaps that Northeast India will eventually prove to be a rice domestication area’, but he would like to see ‘more of an archaeological smoking gun’ (2011: 82). Smoking guns are unlikely to turn up as long as Burma, northeastern India, the eastern Himalayas and much of Yúnnán remain archaeologically uninvestigated. Aside from this vast geographical gap in the archaeology, there is the separate empirical issue of the archaeological recoverability of rice agriculture sites. Traces of ancient farming communities have been better preserved in the hill tracts surrounding the Brahmaputran flood plains than on the fertile fields themselves. In East Asia too, most salvageable rice agriculture sites are in the foothills or at the base of the foothills (Nakamura 2010). Yet the earliest rice-based cultures may have developed on the flood plains themselves. The remains of early rice cultivating cultural assemblages may lie buried forever in the silty sediments of the sinuous lower Brahmaputran basin. Alternatively, the palaeobotanical evidence for the earliest domestication of rice may have been washed out by the Brahmaputra long ago and now lie submerged in the depths of the Bay of Bengal.

By contrast, the absence of evidence for early rice agriculture of great antiquity in meridional mainland Southeast Asia, despite the relatively well researched archaeology of the region, presently embarrasses those who have lately taken to espousing a homeland theory for Austroasiatic along the lower course of the Mekong and around the Mekong delta. By contrast, the fact that the archaeology of northeastern India, the Indo-Burmese borderlands and the northern Bay of Bengal littoral is poorly understood, because it is virtually unresearched, does not compromise Diffloth’s proposed homeland. As the old saw has it, the absence of evidence is not the evidence of absence. Political, cultural, geographical and logistic factors appear to have impeded intensive archaeological research in a vast swathe of territory extending from the lower Brahmaputran basin to the Tenasserim. The same factors have limited population genetic and rice genetic research in this region as well.

4. Languages are not people

Can the human population genetics of modern language communities be plausibly interpreted in light of the hypothesis that early Hmong-Mien were the first domesticators of *japonica* rice and ancient Austroasiatics the domesticators of *indica* rice, or vice versa? If, on the other hand, Asian rice were to be demonstrated to have been domesticated just once from a wild *rufipogon* population in the area which lies between India and Southeast Asia, then who were its domesticators? Such conjectures beg the question as to whether there need be any such correlation between language, people and cultigens at all.

There need not be. Nonetheless a tendency has repeatedly been observed, first recognised in the pioneering studies of Poloni et al. (1997, 2000), that a correlation often obtains between the most frequent Y chromosomal haplogroups of a community and the language which the people happen to speak. A correlation between a community's language and that community's most prevalent paternal ancestries is found often enough that I called this correlation the Father Tongue hypothesis (van Driem 2002).

There are a number of reasons why we might expect this outcome. Initial human colonisation of any part of the planet must have involved both sexes in order for a population of progeny to establish itself. Once a population is in place, however, subsequent migrations could have been heavily gender-biased. Subsequently, male intruders could impose their language whilst availing themselves of the womenfolk already in place. Theoretically, tribes of Amazons could have spread in a similar fashion. If so, then the tell-tale correspondences between mitochondrial lineages and the distribution of linguistic phyla would presumably have been detected by now, but the correlations between maternal lineages and linguistic phylogeography hitherto discerned have been underwhelming. The Father Tongue hypothesis suggests that linguistic dispersals were, at least in most parts of the world, posterior to initial human colonisation and that many of these dispersals were predominantly later male-biased intrusions.

If we infer that a mother teaching her children their father's tongue has been a recurrent, ubiquitous and prevalent pattern throughout linguistic history, then some of the mechanisms of language change over time are likely to be inherent to the dynamics of this pathway of transmission. Such correlations are observed worldwide. The correlation of Niger-Congo languages with Y chromosomal haplogroups is a striking example (Wood et al. 2005). Likewise, the martial and male-biased historical spread of Hànn Chinese

during the sinification of southern China, recounted in painstaking detail in the Chinese chronicles, is clearly reflected in the genetic evidence (Wen et al. 2004). A recent common ancestry between native Americans and indigenous Altaians is also based preponderantly on the shared Y chromosomal heritage and is not quite as well reflected in the mitochondrial lineages (Dulik et al. 2012).

Whilst father tongues may predominate globally, mother tongues certainly do exist in the sense that there are areas on the planet where the linguistic affinity of a community corresponds more closely to the maternally transmitted mitochondrial lineage which the speakers share with other linguistically related communities. In this sense, in the north of today's Pakistan, the Balti speak a Tibetic mother tongue but profess a paternal religion that was first propagated in this area as early in the 8th century by men who came from the Near East. The most prevalent mitochondrial DNA lineages amongst the Baltis are shared with other Tibetan communities, whereas the prevalent Y chromosomal haplogroups probably entered Baltistan with the introduction of Islam (Zerjal et al. 1997, Quintana-Murci et al. 2001, Qamar et al. 2002).

At the same time, a jarring disconnect is sometimes seen between the occurrence of a highly salient genetic marker and the linguistic affinity of a community's language. Hungarians lack the TatC deletion defining the Y chromosomal haplogroup N1c,³ despite the sheer prevalence of this marker amongst all other Uralic language communities (Li et al. 1999). So, it deserves to be repeated that the linguistic ancestors of a language community were not necessarily the same people as the biological ancestors of that community. In fact, some of them could not have been the same people.

It also merits repeating that the time depth accessible to population geneticists studying polymorphisms on the genome is vastly greater than the reach of the linguistically reconstructible past. The wave of anatomically modern humans who introduced the proto-languages that were later to give rise to today's Asian linguistic phyla and language isolates can be dated to between 25,000 to 38,000 years ago (Rasmussen et al. 2011), and the antiquity of Y chromosomal haplogroups such as O1 or O2 has been calculated to be greater than 10,000 years (Yan et al. 2011). Historical linguists, on the other hand, generally estimate the linguistically reconstructible past to be shallower than 10,000 years. This temporal gap must temper and inform all speculations regarding correlations between linguistic and genetic affinity.

With such caveats in place, how can we address the question formulated at the beginning of this section? On the 28th of June 2006, at a symposium held at l'École Française d'Extrême-Orient at Siem Reap, I identified the Y chromosomal haplogroup O2a (M95) as the marker for the spread of Austroasiatic on the basis of the then available genetic data (later published in van Driem 2007). This view has been corroborated by subsequent genetic studies, e.g. Kumar et al. (2007), Chaubey et al. (2010). In the latter article, we concluded that Austroasiatic speakers in India today are derived from a dispersal from Southeast Asia, followed by extensive sex-specific admixture with local populations indigenous to the Subcontinent.

The autosomal data also reflect the distinction between two components in the genome, one represented by the predominantly indigenous maternal lineages and the other by the intrusive paternal O2a lineage that correlates with the linguistic affinity of the Austroasiatic language communities in the Indian subcontinent. These findings go well beyond Robert von Heine-Geldern's model of a Southeast Asian homeland and envisage a father tongue spread of Austroasiatic, borne to the Indian subcontinent by predominantly male speakers from mainland Southeast Asia, but also involving a complex sociolinguistic prehistory of bidirectional gene flow across the Bay of Bengal (Chaubey et al. 2010). In many parts of the world, the mitochondrial DNA lineages often appear preponderantly to reflect older resident maternal lineages.

The argument for the Father Tongue interpretation of the spread of major linguistic phyla in eastern Eurasia, such as Austroasiatic, is therefore not based solely on the frequencies of particular Y chromosomal haplogroups. The Father Tongue hypothesis is originally based on the differential correlation of Y chromosomal and mitochondrial lineages with the modern geographical distribution of language communities, i.e. the presence or absence of a strong correlation between linguistic affinity and genetic markers in the non-recombinant portions of the genome. As one might expect, a distinct provenance for the maternal and paternal lineages appears to be reflected by studies of autosomal markers as well (Chaubey et al. 2010). More importantly, a rooted topology of the Y chromosomal tree in its entirety and of the Y chromosomal haplogroup O in particular is central to the reconstruction of linguistic population prehistory in eastern Eurasia, operating on the assumption of the veracity of the Father Tongue hypothesis.

The available genetic data also enabled us to identify a correlation of the Y chromosomal haplogroup O3a3b (M7) with the spread of Hmong-Mien, whilst our genetic samplings throughout the Himalayan region had estab-

lished a correlation between Tibeto-Burman and the paternal lineage O3a3c (M134) (Parkin et al. 2006, 2007, Kraaijenbrink et al. 2007a, 2007b, 2009, van Driem 2011). The Y chromosomal haplogroup O is becoming ever more minutely mapped, and most recently the phylogenetic positions of mutations P164 and PK4 within the haplogroup have been revised (Yan et al. 2011). Yet the antiquity calculated for many of these mutations is generally greater than the time depth that most historical linguists are willing to ascribe to the major language phyla.

Let us venture into the twilight beyond the linguistically reconstructible past to a time just after the Last Glacial Maximum, when the Y chromosomal haplogroup O (M175) had split up into the subclades O1 (M119), O2 (M268) and O3 (M122). Based on what is known about linguistic phylogeny and about the geographical distribution of modern linguistic communities today, the three subclades can putatively be assigned to three geographical loci along an east-west axis. For the sake of argument and schematic representation, and without any claim to geographical precision or veracity, I shall assign the haplogroup O1 (M119) to the drainage of the Pearl River and its tributaries in what today is the Chinese province of Guǎngdōng. I shall situate haplogroup O2 (M268) in southern Yúnnán and O3 (M122) to the area where today's northeastern India, southeastern Tibet and northern Burma adjoin.

Since we have associated O2a (M95), which is a derivative clade of haplogroup O2 (M268), with the Austroasiatic language phylum, we might conjecture that Asian rice, perhaps both *japonica* and *indica* rice, was first domesticated roughly in the general area hypothetically imputed to O2 (M268) here. Whilst the bearers of the O2a (M95) haplogroup became the *Stammväter* of the Austroasiatics, the other derivative paternal subclade O2b (M176) spread eastward, where they introduced rice agriculture to the areas south of the Yangtze. Though the bearers of the O2b (M176) haplogroup continued to sow seed as they continued to move ever further eastward, they left little or no linguistic traces, except maybe an Austroasiatic name for the Yangtze river, as proposed by Pulleyblank (1993), reflected as the toponym borrowed by Old Chinese as 江 *kʰroŋ (*jiāng*).

Meanwhile, back in southern Yúnnán, the early Austroasiatics spread from this locus initially to the Salween drainage in northeastern Burma and to the area that today is northern Thailand and western Laos. In time, the Austroasiatics would spread as far as the Mekong delta, the Malay peninsula, the Nicobars and later even into eastern India, where they would intro-

duce both their language and their paternal lineage to indigenous peoples of the Subcontinent.

At the locus putatively assigned to the haplogroup O3 (M122), the bearers of this marker gave rise to the paternal lineages O3a3c (M134) and O3a3b (M7). Whilst the bearers of the polymorphism O3a3c (M134) stayed behind in the area comprising northeastern India, southeastern Tibet and northern Burma, the bearers of the O3a3b (M7) paternal lineage migrated eastward to settle in the areas south of the Yangtze. On their way, the early Hmong-Mien encountered the ancient Austroasiatics, from whom they adopted rice agriculture. The intimate interaction between ancient Austroasiatics and the early Hmong-Mien not only involved the sharing of knowledge about rice agriculture technology, but also left a genetic trace in the high frequencies of haplogroup O2a (M95) in today's Hmong-Mien and of haplogroup O3a3b (M7) in today's Austroasiatic populations.

On the basis of these Y chromosomal haplogroup frequencies, Cai et al. (2011: 8) observed that Austroasiatics and Hmong-Mien 'are closely related genetically' and ventured to speculate about 'a Mon-Khmer origin of Hmong-Mien populations'. More precisely, the incidence of haplogroup O3a3b (M7) in Austroasiatic language communities of Southeast Asia appears to indicate a significant Hmong-Mien paternal contribution to the early Austroasiatic populations whose descendants settled in Southeast Asia, whereas the incidence of haplogroup O3a3b (M7) in Austroasiatic communities of the Indian subcontinent is undetectably low. The incidence of haplogroup O2a amongst the Hmong-Mien appears to indicate a slightly more modest Austroasiatic paternal contribution to Hmong-Mien populations than vice versa.

As the Hmong-Mien moved eastward, the bearers of haplogroup O2b (M176) likewise continued to move east. Even further east, the O1 (M119) paternal lineage gave rise to the O1a (M119) subclade, which moved from the Pearl River drainage eastward to the Mǐn river drainage in the hill tracts of Fújiàn province and across the strait to Formosa, which consequently became the *Urheimat* of the Austronesians. Back west in the easternmost spurs of the Himalayas, the bearers of Y chromosomal haplogroup O3a3c (M134) expanded eastward into Sìchuān and Yúnnán, north and northwest across the Tibetan plateau as well as westward into the Himalayas and southward into the Indo-Burmese borderlands. In the west and south, the early Tibeto-Burmans encountered Austroasiatics, who had preceded them.

The relative frequencies of the Y chromosomal haplogroup O2a (M95) in various Tibeto-Burman populations of the Indian subcontinent (Sahoo et

al. 2006, Reddy et al. 2007) suggest that a subset of the paternal ancestors of particular Tibeto-Burman populations in northeastern India, e.g. certain Bodo-Koch communities, may originally have been Austroasiatic speakers who married into Tibeto-Burman communities or were linguistically assimilated by ancient Tibeto-Burmans. At the same time, median-joining network analyses of haplogroup O2a (M95) microsatellites have suggested a division in the Indian subcontinent between Tibeto-Burmans vs. Austroasiatic and Dravidian language communities. Austroasiatics and Dravidians show greater Y chromosomal microsatellite diversification than Tibeto-Burman language communities, and the highest frequency of the O2a haplogroup is found in tribal populations in Orissa, Chattisgarh and Jharkhand (Sengupta *et al.* 2006).

We must bear in mind that Y haplogroups are subject to selection and that frequencies change over time. As stressed above, haplotype frequencies by themselves are not a sufficient criterion. A rooted topology of the Y chromosomal tree and its subsidiary clades provides key evidence. Moreover, the ethnolinguistic significance of paternal lineages becomes even more manifest when other portions of the genome are scoured for correlations with linguistic phylogeography. At the same time, our understanding of what constitutes neutral diversity has been tempered by mathematical modelling. Simulations have shown that a normally low-frequency allele could surf on a demic wave of advance and so attain high frequency across a vast area. Gene surfing during a spatial expansion is likely to result in distinct geographical sectors of low genetic diversity separated by sharp allele frequency gradients.

The result of recurrent bottleneck effects during range expansion into newly colonised territories can mimic complex phylogeographical patterns of adaptation and segregation into clades in post-glacial niche refugia. Likewise, the massive introgression of resident genes into the incursive population can also be misinterpreted as the result of a selective process (Excoffier and Ray 2008, Excoffier *et al.* 2009). Surfing on the crest of a demic wave of expansion confers a selective advantage when compared to alleles left behind in the core area (Klopfstein et al. 2006, Moreau et al. 2011). Both the dynamics of sex-biased dispersals as well as the process of the sexually asymmetrical introgression of resident alleles into incursive populations can be modelled in terms of hybridisation during range expansions (Petit and Excoffier 2009, Currat and Excoffier 2011).

An observed state of affairs for which a particular model of population prehistory has been advanced may in many cases very well be either the

result of demography or of selection on genome diversity (Fagundes et al. 2007). However, we must keep in mind that a scenario that has been computed to be the statistically more likely scenario may not necessarily correspond to the prehistorical reality. Though presumably paternal lineages may often preferentially enjoy the benefits of surfing, incursive Y chromosomal lineages can go entirely extinct, as the linguistic evidence⁴ would suggest may very well have happened with the Y chromosomal haplogroup N1c in Hungary.

We must also not lose sight of the fact that these speculations are based on correlations between language and Y chromosomal haplogroups and that these too are interpreted in the light of the assumed veracity of the Father Tongue hypothesis over a vast stretch of time. This assumption may not hold true for all times in the past. Furthermore, correlations may be due to different kinds of circumstances other than causation or direct relationship. So, whilst we are free cautiously to develop arguments which buttress a speculative model of ethnolinguistic prehistory, such as the one outlined here, we must not lose sight of the essential distinction between the facts and our assumptions and inferences as well as the precise nature and limitations of the empirical basis for our speculations.

5. The proof of the pudding depends on who is doing the eating

The Austric theory, introduced by the Austrian Jesuit Wilhelm Schmidt in 1906, posits a deep phylogenetic relationship between the Austronesian and the Austroasiatic language phyla. The theory with its potential implications for prehistory has continued to engage scholars, although its empirical basis has always remained decidedly scanty, e.g. Benedict (1991), Bengtson and Blažek (2000), Blust (1996), Diffloth (1994), van Driem (1999), von Hevesy (1930), Reid (1994).

On the 11th of January 2003 at the 9th International Conference on Austronesian Linguistics at Australian National University in Canberra, I presented a talk entitled ‘The Austric Problem: Issues, Solutions, Ramifications’. This concise account of the history of thinking about the Austric theory included an assessment of the various types of evidence mustered in support of this theory by its various proponents and the criticisms levelled against the theory by its assailants. I strove to keep the overview as impartial and as comprehensive as possible.

At the conclusion of my talk, people approached me to air their views. Two scholars congratulated me enthusiastically for utterly demolishing the Austric theory, and one even said that he now expected never to see anything about this theory in print ever again. Moments later, two other members of the audience thanked me wholeheartedly for establishing the verisimilitude of Austric (one said ‘proving Austric’) and definitively relegating the criticism of skeptics and detractors to the dustbin of history.

The same set of linguistic evidence and the same discussion of the history of thinking on this hypothetical linguistic relationship had convinced some that Austric had been conclusively demonstrated, whilst others felt that the theory had now been decisively discarded. Although these reactions reassured me that I might have succeeded in making my presentation of the Austric case as impartial as possible, I was left wondering to what extent proof could be a matter of taste. How selectively do we filter out what does not corroborate the views that we already hold? Personal inclinations and matters of taste certainly play a role in shaping the history of science, and paradigm shifts, as Kuhn (1969) and Murray (1994) have shown, are also social phenomena. However, proof in science cannot be just a matter of taste. Rather, it can often be observed that some scholars are highly selective about how they interpret evidence.

Confronted with the overwhelming growing body of evidence in support of the Father Tongue hypothesis, Forster and Renfrew (2011: 1391) impute the spread of language families to ‘emigrating agriculturalists’ who ‘took local wives’. This interpretation is a transparent attempt to succour Bellwood and Renfrew’s embattled First Farmers hypothesis, which seeks to ascribe the founding dispersals of language families to the spread of agriculture (Bellwood and Renfrew 2002). At the same time, in order to buttress Renfrew’s widely doubted hypothesis of an Indo-European homeland in Asia Minor, Forster and Renfrew also propose a correlation of Indo-European with the Y chromosomal haplogroup J2a. In fact, it remains moot whether any part of Y chromosomal phylogeography correlates well with the spread of the Neolithic horizon.

Not every population movement led to the spread of a language phylum, and population movements are not uniform in nature. Whether during the exodus of anatomically modern humans out of Africa or at the shallow time depth of the colonisation of Oceania by Austronesian populations, the colonisation of previously uninhabited lands invariably involved both sexes and the introduction of a language phylum. During the Neolithic horizon, the spread of farming was necessarily a sedentary and incremental process,

which likewise must mostly have involved both sexes. Early farmers might only have been able to spread their language at times of great surplus and concomitant population growth, perhaps sometimes involving the establishment of agricultural colonies elsewhere. By contrast, the modern ethnolinguistic composition of Asian populations must be understood, at least in part, as having resulted from male-biased linguistic intrusions, whether motivated by conquest, land grab or the urge to seek out new habitats.

In my argument against the premises and the reasoning behind the hypothesis of the founding dispersals of language phyla having been mediated by the spread of farming, I proposed the telic and more complex Centripetal Migration theory (van Driem 2007). I shall not repeat that exposition here, but, with reference to Forster and Renfrew's wilful interpretation of the Y chromosomal haplogroup J2, I shall reiterate that, in the context of the Indian subcontinent, 'the J2 haplogroup... appears to emanate from the Arabian Peninsula and, unlike haplogroups N and R1a, attains no high frequency in Ceylon' and 'probably reflects the historically attested male-borne eastward spread of Islam', whereas Y chromosomal haplogroups of the R subclades spread to the Subcontinent 'from the northwest along with Indo-Aryan language across northern India and to Ceylon' (van Driem 2007: 5). The spread of various Y chromosomal R subclades is likely to be linked to the dispersal of Indo-European from an original homeland in the Pontic-Caspian steppe, whilst the current geographical distribution of the Y chromosomal lineage L provides the likeliest candidate for a vestige of an earlier patrilingual dispersal of Elamo-Dravidian emanating from a region which encompassed the Bactria and Margiana of later prehistory.

Notes

1. Ferlus (1996, 2010), however, contests the reconstructibility of *(kə)ḅa:ʔ 'rice plant' and *phe:ʔ 'rice bran' and contends that the etymon *rəŋko:ʔ originally reflects the word for taro, arguing that this semantic shift occurred because rice was originally a wild grass which grew in taro fields. However, these hypotheses are assessed by Diffloth (2011).
2. The linguistic and other evidence, outlined here and discussed in detail elsewhere (van Driem 2011, 2012), was first presented at the 4th International Conference on Austroasiatic Linguistics (ICAAL 4) at Mahidol University on 29 October 2009. I should like to thank Martha Ratliff for sharing the index portion of her then still forthcoming handbook on Hmong-Mien historical pho-

- nology. Meanwhile, Ratliff's handbook (2010) has now been published by Pacific Linguistics in Canberra.
3. The 2008 Y Chromosome Consortium haplogroup labels are used here.
 4. The presence of the Hungarian language in the region that was once Pannonia represents incontrovertible linguistic evidence of the advent of Uralic linguistic ancestors, a fact which is historically attested at any rate, but the hypothetical correlation of the Y chromosomal haplogroup N1c with the Uralic linguistic phylum, of course, remains entirely conjectural.

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Experimental methods in psycholinguistics

Constanze Vorweg

1. The rationale behind the experimental approach

To study language production, language comprehension, language representation and language acquisition means largely to ask what processes are involved, what mechanisms underlie and what factors contribute to the phenomena explored. Therefore the experiment is one of the most important methodological approaches within psycholinguistics. Its basic idea is to systematically manipulate certain variables while controlling for the effects of others – as a way of dealing with the problem of scientific *explanation*, as opposed to the problem of *description* (which is tackled by other methods). If we are to find out *how* and *why* something occurs, we need to compare different conditions with respect to their effects on the phenomena under investigation – and that's what experiments are about.

2. Definitional criteria of an experiment

Experiments study the effects of one variable on another. The main idea is to systematically vary conditions in order to determine their effects onto measures of language processing. Those variables which are measured (in dependence on the experimental conditions) are called *dependent*. Those which are manipulated directly by the experimenter and constitute the experimental conditions are called *independent*. The aim is to reveal causal or conditional relations between independent and dependent variables. Accordingly, the idea is to deliberately produce occurrences (cf. already Wundt 1896). That is, the emergence or progression of the phenomenon under investigation should depend on the voluntary impact of an experimenter. Therefore, an important criterion of an experiment is that the *experimental manipulation is voluntarily brought about*.

Let's say we are interested in factors influencing the resolution of ambiguous pronominal anaphora. Possible factors proposed include gender and number agreement, semantic consistency, first mention, recency of mention, grammatical-role parallelism, subjecthood/topichood, occurrence

in main clause, and many more (cf. Kehler, Kertz, Rohde and Elman 2007; Mitkov 2002; Song and Fisher 2007). To test the possible factor of *grammatical-role parallelism*, one may compare sentences with a *subject* pronoun in the final clause, see (1), vs. those with a pronoun in another grammatical role, see (2) – both having two possible antecedents in the first clause (examples from Smyth 1994).

- (1) a. **Gloria** tickled **Emma** and then **she** poked Mike. [subject]
 b. **Sue** gave **Maureen** a new watch and then **she** gave Joe a record. [subject]
 c. **Richard** chased **Jim** around the corner and then **he** chased Caroline to Yonge Street. [subject]
- (2) a. **John** pushed **Sammy** and then Evelyn kicked **him**. [direct object]
 b. **Tommy** told **Kevin** to find the new bikes and then Samantha asked **him** to find the new tires. [indirect object]
 c. **Adam** argued with **Barry** about the new format and then Linda argued with **him** about the new rules. [prepositional object]

If we ask the participants of such an experiment to indicate whom the pronoun in each sentence refers to, we may compare the proportions of answers referring to antecedent candidate 1 (*subject* assignment) vs. antecedent candidate 2 (*nonsubject* assignment) between conditions. This was done by Smyth (1994), who found that the proportion of subject assignment was significantly higher (in fact 1.0) for *subject* pronouns than for *nonsubject* pronouns (.12). The grammatical roles of nonsubject pronouns were *direct*, *indirect* or *prepositional* object – in each case corresponding to one of the nonsubject NPs in the preceding clause. So, the dependent measure in this experiment was proportion of subject assignment, and the independent variable was grammatical role of the pronoun (subject vs. nonsubject). Importantly, pronoun assignment was a function of the pronoun's grammatical role when the sentences were fully parallel (e.g., with a dative-object pronoun having a dative antecedent, or a pronoun within a prepositional phrase having an antecedent within a prepositional phrase, etc., plus constituent structures, thematic roles and attachment site being parallel across clauses); however, this was not the case when they were not fully parallel, with nonsubject pronouns and potential antecedents having different grammatical roles. Thus, the phenomenon studied was brought about by the experiment-

er by constructing fully parallel structures and manipulating the anaphor's grammatical role.

To make sure, however, that a phenomenon (in our example: pronoun assignment) has really arisen from or been modulated by our experimental manipulation, we need to control other potential influences. And this is the second definitional criterion of an experiment. The experimental manipulation must be *sufficiently separated* from other potentially influential factors – and not be confounded with them. In our introductory example (Smyth 1994), several aspects were held constant, such as gender and number agreement between the pronoun and potential antecedents, type of pronoun, constituent structure and attachment sites (grammatical parallelism), and temporal conjunction. Those variables are called *control variables*, as these are the variables which we control, i.e. whose influence we eliminate. There are several ways to achieve control over them, which together with the variation and combination of the independent variables as well the way of drawing samples constitute experimental designs (see Section 4).

Finally, *replicability* is an important feature of experiments, as it allows determining how reliable and precise the conditions of a phenomenon can be specified as a first estimate of the validity of a phenomenon (Sprung and Sprung 1984), which would not be possible with singular observations. In addition, experimental results can be reproduced by other researchers.

3. Research hypotheses and the wheel of science

3.1. Hypotheses, predictions and theories

The purpose of psycholinguistic experiments is to verify *hypotheses* about human language processing. Hypotheses concern the relation between independent and dependent variables (see 2); they are tentative, verifiable answers to research questions. So, for example, the question how lexically ambiguous words are interpreted in context could tentatively be answered by assuming (i.e., predicting) that only contextually appropriate word meanings are activated (e.g., Glucksberg, Kreuz and Rho 1986). Other examples of research hypotheses are: nine-month old infants are sensitive to phonotactic patterns in their native language (e.g., Jusczyk, Luce and Charles-Luce 1994); the verb used in a placement instruction influences the interpretation of spatial prepositions (Vorwerg and Weiß 2010).

Research hypotheses are at the very heart of the experimental method. Performing experiments means basically testing hypotheses about the effects of independent variables onto dependent variables. Where do the hypotheses to be tested come from? They can arise out of singular observations, practical needs, qualitative research, or pilot studies. However, more often than not they are derived from psycholinguistic theories and models of language processing.

To give an example, the Neighborhood Activation Model of spoken word recognition predicts that word recognition would be inhibited by an immediately preceding phonetically similar word and that low frequency primes would provide relatively more inhibition than high frequency primes (Goldinger, Luce and Pisoni 1989). These predictions derive from the model's assumption of competition among phonological neighbors (phonetically similar words). Specifically, the model postulates that (1) upon presentation of a word a set of acoustic-phonetic patterns are activated, (2) acoustic-phonetic patterns which correspond to words activate word decision units, and (3) once activated, the word decision units monitor higher-level lexical information, such as word frequency, which adjust the activation levels in the decision units (Luce and Pisoni 1998). For determining whether a particular word has been present, this word's frequency-weighted probability is set into relation to the summed frequency-weighted probabilities of all words in the similarity neighborhood. Therefore, increasing the activity of words in the neighborhood is predicted to reduce the accuracy of stimulus identification. And one way to enhance the activation level of a stimulus word's neighborhood is the preceding presentation of a phonetically related word (i.e., one of its neighbors), as the activation of a word is known to not dissipate immediately. So, the residual activation of the neighbor's word should produce increased competition from the word's neighbourhood reducing identification performance. And if the preceding word (the prime) is of low frequency, it should be identified less accurately and less quickly, producing more residual activation leading to relatively more competition than high frequency primes.

So both predictions derive from the model's main postulates. Hence, this procedure corresponds to the *deductive* form of reasoning described (and favored) by Einstein (1919) as a way for gaining scientific knowledge: a set of hypothetical postulates is built which seems suitable to explain a number of facts, and the consequences deductively drawn from those postulates can then be tested empirically providing a criterion for the validity of the proposed postulates. More generally, deductive reasoning is involved in

the experimental method as hypothesis testing usually means putting a logical consequence (entailment) of a research hypothesis to the test. At the same time, *inductive* reasoning is involved in the experimental method – both in the generation of hypotheses or postulates and in the inferential-statistical analysis of results. The generation of hypotheses (if not derived from more basic postulates) often includes inferring general principles which can explain particular observations, or patterns observed in earlier research. In data analysis, inferential statistics (also called inductive statistics) is used to generalize from small samples to populations (see below).

3.2. Operationalization and measures

To test experimental hypotheses, they need to be *operationalized*, i.e., transformed into concrete, observable events and measurable response variables. Going back to the anaphora example in Section 2, a particular language has to be chosen, verbs with suitable verb frames must be found and the according arguments, words, names need to be selected and sentences constructed. The sentences have to be presented in a certain form, and measures are needed which serve as the dependent variables.

The parameters used for capturing aspects of human language processing include both offline and online measures. *Offline measures* register the results of language processing after completion of the process under investigation. Examples include frequency of production or selection of a linguistic form or structure, ratings of suitability or grammaticality, and psycholinguistic test performance.

Online measures in contrast tap into the involved processes and representations in the course of processing, i.e., while language is constructed in real time. More often than not they are time-sensitive and indirect – sometimes supplemented by spatial information. Examples include reaction time measures reflecting aspects of processing such as difficulty or activation, discrimination or confusability data, eyetracking techniques, as well as neuroimaging and neurophysiological measures. In addition to providing insight into processing steps, online measures are more sensitive with respect to group differences (MacWhinney, Feldman, Sacco and Valdés-Pérez 2000) and more specific with respect to the mechanisms involved (cf. Kuperberg 2010; Peelle, Cooke, Moore, Vesely and Grossman 2007; Tompkins and Baumgaertner 1998).

3.3. Data analysis

The results of an experiment performed are subject to *data analysis* using *inferential statistics*. The rationale behind performing inferential statistics is to determine whether, in the population, the independent variable (in terms of the values that it takes in the experiment) has differential effects onto the dependent measures. There are two important aspects involved here.

First, the experimental hypothesis predicts a *difference* between conditions (i.e., levels of the independent variable). This conforms to the “method of differences” proposed by John Stuart Mill (1843: p. 455) as a method of experimental inquiry:

If an instance in which the phenomenon under investigation occurs, and an instance in which it does not occur, have every circumstance save one in common, that one occurring only in the former; the circumstance in which alone the two instances differ, is the effect, or the cause, or a necessary part of the cause, of the phenomenon.

Second, data analysis refers to the *population* from which a particular sample was drawn, and the question is whether a particular difference found in the sample can be generalized to the whole population.

As there is usually some variation in language processing and language materials due to circumstances not relevant to and not controlled for by the experiment (such as fluctuations in attention, concepts activated shortly before the experiment, etc.), some difference between conditions can always be expected to occur – even when the experimental manipulation actually has not the predicted effect. So, one way to determine statistically whether there is an effect in the population or not is to calculate how probable the difference observed in the sample might have occurred due to some random variation in the data (i.e., pure chance) – instead of being an effect of the experimental manipulation.

This is called the “null hypothesis”: the statistical hypothesis that there is no real difference in the population with respect to the experimental manipulation studied. On the basis of a statistical model and using an appropriate statistical test, the probability can be computed to obtain a difference like the one observed (or larger) even though the null hypothesis is true, i.e., differences are due to chance. The “alternative hypothesis” – that there is a real difference in the population with respect to the experimental manipulation is judged as being confirmed when the probability of obtaining a difference at least as large as the one observed by chance is very small and

the difference or effect found is then said to be “statistically significant”. Often a criterion of 5% is adopted as significance level.

Null hypothesis significance testing is the statistical method used most frequently for statistical inference, even though it has been frequently criticized, mainly on logical grounds (see Krueger 2001, for a review) and a number of alternatives have been proposed, including “effect size” and “confidence intervals” (see Denis 2003, for a review). However, other researchers defend null hypothesis testing and refute its criticisms; moreover, as pointed out by Krueger, its pragmatic value might be an important reason for its continued use. In addition, the probability of effects being true for a population can be further enhanced by replicating experiments.

When using significance testing, an important aspect to keep in mind is that sampling is twofold: There is a sample of participants and a sample of language materials. Findings should generalize beyond both types of samples, that is, to both the linguistic-community population (such as speakers or learners of a language, bilingual infants, etc.) and the language population (such as words, nouns, sentences of a language, etc.). Therefore, if language materials assigned to participant groups are sampled from a larger population of items, it is not correct to regard the materials variable as a fixed factor and to ignore the sampling variance – a way of analyzing language-related data criticized by Clark (1973) as the *language-as-fixed-effect fallacy*. Possible solutions are using a statistical procedure which treats language materials as a sample (see Clark), or controlling for linguistic item variance by experimental procedures such as matching or counterbalancing (Raaijmakers, Schrijnemakers and Gremmen 1999; see Section 4 for a description of experimental designs).

An alternative also discussed by Clark (1973) is the “method of single cases of language material” suitable to test hypotheses which can be applied to single words (or other kinds of language materials) in contrast to those which require a comparison of central tendencies. For example the verb used in a placement instruction – and even a single verb particle (German *ein-* ‘in’) – can have an impact on the interpretation of perspective-dependent spatial prepositions (Vorwerk and Weiß 2010).

3.4. Interpretation and theory and novel predictions

After performing the data analysis, the findings are *interpreted* with respect to their bearing on the original research hypotheses, predictions and *theory*.

New predictions may be derived, the theory may be altered, deductive reasoning plays a part again – closing the circle of science (cf. Wallace 1971).

Typically, psycholinguistic data interpretation, theory and modeling based on experimental findings relate to functional or mechanistic explanations of phenomena in language processing. Whereas *functional explanations* describe causal relations in terms of why a particular psycholinguistic phenomenon (such as mutual adaptation in dialogue) might be useful and what functions it might fulfil, *mechanistic explanations* describe causal relations in terms of the processes and mechanisms involved (see Bechtel 2005, for a discussion of mechanistic explanations; an example is the interactive alignment account by Pickering and Garrod 2004).

An important aim in experiment-related theory development is to also be able to explain previous experimental results; and the plausibility of a theory is enhanced if it can convert a variety of experimental results into a few underlying general principles, even more so if it can reconcile contradictory results obtained in different studies. A next step is then again to *derive novel observational predictions* and to test them experimentally. For example, a coherence-of-discourse theory has been proposed (Kehler et al. 2007) to explain a number of factors described in the literature for anaphora resolution, including the grammatical-subject preference and grammatical-role parallelism (cf. Section 2). New evidence is then presented in support of the theory, which includes a neutralization of grammatical subject and parallelism preferences by controlling for coherence. So, data interpretation tends to relate to previous findings if possible, and a theory's explanatory value is relatively stronger if it offers a *single mechanism* for a variety of empirical data, even more so if it can explain otherwise mystifying results.

By the same token, a theoretical account is strengthened by *converging evidences* from independent scientific sources of information. For example, as argued first by Marshall and Newcombe (1973; cf. Vorweg 2010) in their pioneering analysis, the errors described for clinical patterns of acquired dyslexias are consistent with results from the general word recognition and reading research, such as types of reading errors in children learning to read or adults reading under time pressure, or also word frequency effects. More recent research endeavours have explicitly focused on how converging approaches and sources of evidence for understanding both normal reading and its breakdown can lead to new insights (e.g., Klein and McMullen 1999).

One important aspect addressed in data interpretation is the question of their generalizability and what limitations or qualifications there might be.

For example, the factors of anaphora resolution mentioned above (see Section 2) refer to unaccented (third-person) pronouns, as contrastive stress is known to affect coreferentiality (e.g., Akmajian and Jackendoff 1970). Conversely, the generalizability of an account is corroborated and extended by recurrent findings, which are obtained under different circumstances

The interpretation of experimental results often involves *reasoning over indirectly related effects* (especially with online measures, cf. 3.2) in order to be able to gain insight into processing aspects which are not directly observable. For example, differential priming and interference effects with phonologically vs. semantically related items (see 5.1) are used to draw conclusions about the time course of processes in word production. Another example is eye movement data, which are interpreted with respect to different aspects of language comprehension or production (see Section 5).

Reasoning based on indirect observation is also usually involved in attempts to contribute to the *fundamental issues* debated in psycholinguistics, such as the question of whether (or when) processing is parallel vs. serial, and whether (or when) it is interactive vs. autonomous.

Parallel vs. serial processing refers to the question of whether several elements of input (such as features, letters, words in reading) or competing candidates of internal output (such as words in word recognition, word meanings in resolving lexical ambiguity or sentence structures in resolving structural ambiguity), or sequential elements of output (such as phonemes, syllables, words, constituents in speech production) are processed or represented at the same time, i.e. in parallel, or one after the other, i.e. serially. The term is also used to refer to the question of whether certain subprocesses (stages, subsystems, etc.) occur one after the other or in parallel.

One method of testing parallel vs. serial processing is error analysis. For example, blending errors in speech production, see (3), suggest that alternative forms or speech plans are activated concurrently (example from Harley 1984). Another example is transposition errors in typing, writing or speech, see (4), suggesting simultaneous output activation or display in the output buffer (examples from Bawden 1900, cited in MacKay 1970).

- (3) a. Speech Plan 1: THE SKY IS BLUE.
 b. Speech Plan 2: THE SUN IS SHINING.
 c. Actual Utterance: *The sky is shining.*

- (4) a. Wasserflasche → Flasserwasche
 b. Mond und Sonne → Sond und Monne

Other methods of testing parallel vs. serial processing use reaction-time or accuracy measures (see Townsend 1990, for an overview and a discussion). Methods based on accuracy may examine whether delimiting the time available for processing leads, e.g., to a reduction in accuracy (to be expected if one item is processed after the other), or else a large number of confusions between similar items (only to be expected if a number of items is simultaneously in a partially processed state). One example for such a result is the word superiority effect in letter recognition. When participants are asked to report a letter after a very brief presentation, they are better able (i.e., more accurate) if the letter is embedded in a word than when it is isolated (or surrounded by arbitrary letters). A serial processing of letters would predict a better performance for a single letter as the average amount of processing per letter would decrease with an increasing number of letters to be processed in the same, short amount of time. However, accuracy is not only unimpaired by a larger number of letters, it is better for letters within meaningful words. Importantly, this word superiority effect is present at all word positions at once, which means that each letter is, in its recognition, affected by all other letters, while at the same time also affecting them (Wheeler 1970). This is evidence of parallel letter processing and also of an interaction (see below) between letter and word recognition.

Methods based on reaction-time measures are most frequently used. One way to inspect data for parallelism vs. seriality is a comparison of reaction times for a different number of items to be processed. Seriality predicts a linear relationship between “mental load” (number of items to be processed) and response time, as argued by Sternberg (1966). By the same token, flat reaction-time curves are indicative of parallel processing. The problem is that linearly increasing reaction time curves can not only be explained by serial processing but also by other types of limitation in capacity including limited-capacity parallel models (Townsend 1990). However, inferences about parallel processing can validly be drawn, if reaction time remains constant or even gets faster with increasing mental load.

Another way to determine seriality vs. parallelity is the use of factorial designs (see also Section 4). If two or more factors (e.g., word frequency and regularity) known to have effects on reaction time and assumed to selectively affect distinct subprocesses are manipulated at the same time, their effects should be additive if they function serially. Therefore, subadditivity – a kind of interaction between factors, in which the increase in reaction time due to both factors is smaller than the sum of the single effects (see Figure 1) – signals parallel processing (e.g., Townsend 1990).

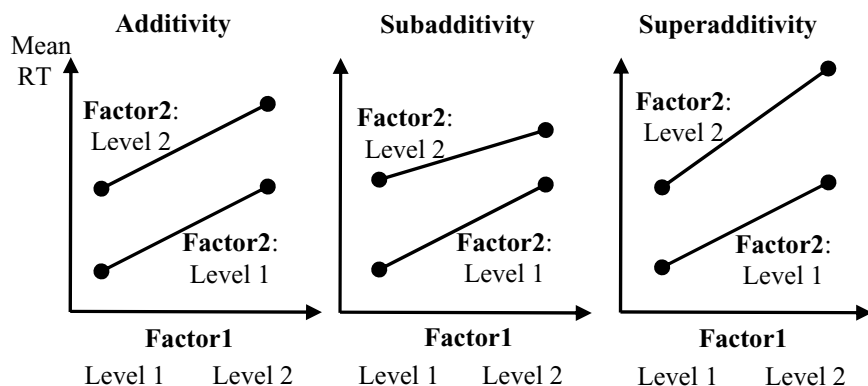


Figure 1. Schematic representation of data patterns in a factorial design with two factors which both affect response time (e.g., for word frequency and regularity, level 1 corresponds to a high, level 2 to a low value).

A further approach is the method of redundancy gain. When one target or one dimension level or one processing route is sufficient for making a response, but a second one equally sufficient for making a correct response is also present or assumed to be available (response “yes”, if either of them or both are present), the question is what effect this redundancy has on response time. Examples include color and color words (Eidels, Townsend and Adams 2010), visually and auditorily presented words (Lewandowski and Kobus 1993), and semantic and asemantic retrieval routes for Arabic digits (Campbell and Metcalfe 2008). Frequently, a reduction in reaction time is observed with redundant targets or target dimensions. This is interpreted as evidence for parallel processing – with either separate activation or coactivation (e.g., Townsend and Nozawa 1995). In the case of separate processes, processing is executed separately within each process producing its own activations, and the gain in response time can be explained by a “race” (or “horse race”) between both processes, which terminates as soon as one of them is completed. As the response time needed varies stochastically, the probability of a shorter reaction time is larger with two targets or processes. Therefore, this purely statistical effect is called “probability summation”. In contrast, in the case of coactivation both processes feed into one decision mechanism before a decision is made. As their parallel activations are summed together in one decision mechanism, a decision can be made faster, leading to the redundancy gain with two entities affording the same response being present at the same time. Another way to explain the redundancy gain is the assumption of a crosstalk (mutual impact on processing) between both channels. If they have mutual access to partial

information and influence each other during processing, this would also lead to shorter responses in the sense of a redundancy effect – both with coactivation or with separate activation (see Miller 1991; Townsend and Nozawa 1995). In contrast to separate activation (without crosstalk), both coactivation in one common decision mechanism and crosstalk before activation summation explain redundancy effects by a cooperation between both processes before a decision is made – some kind of interaction in the broad sense of the word.

Interactive vs. autonomous processing refers to the question of whether the modules, subsystems or subprocesses involved work independently, producing separate results which only after completion can be compared or combined or passed on, or whether their processing works together in that their temporary products of processing before completion combine in some way – either by informing each other or by feeding into one mechanism such that their output is a conjoint result. As can be seen from the preceding discussion, with respect to subprocesses this issue is often intertwined with the issue of serial vs. parallel processing – however, parallel processing is in principle also possible without crosstalk or coactivation of subsystems.

One type of interaction concerns levels of processing. Interaction between levels of processing occurs when there is cascading of activation to a subsequent level before processing is completed at the previous level, or when there is feedback from logically later processes onto those logically preceding them. An example is the above-mentioned word-superiority effect which can be explained by a feedback from the lexical (the word) level to the letter level before letter recognition is completed (as assumed in the interaction activation model of letter recognition by McClelland and Rumelhart 1981). One methodological approach to gain support to interactive processing, followed by Wheeler (1970), is to systematically rule out all conceivable hypotheses for separate mechanisms.

The question of whether there is interaction between levels of processing is also hotly debated for language production. Specifically with respect to lexical access (i.e., accessing a word in the mental lexicon), the question is whether its two components – lexical selection and phonological encoding (see, e.g., Levelt 1999) – occur in discrete, non-overlapping stages or whether there is an interaction in terms of some phonological information already being activated during semantic-syntactic word access and some semantic information being activated during phonological access (see, e.g., Dell and O'Seaghdha 1992). One method used to find evidence on this question is an interference paradigm in which pictures are named in

the presence of either semantically or phonologically related words while varying the relative onsets of pictures and words, allowing for an analysis of the time course of semantic vs. phonological information being activated during word production (Schriefers, Meyer and Levelt 1990; see 5.1).

Another example of findings interpreted with respect to the question of interaction between processing levels in production are so-called "mixed errors". These are substituting speech errors – normal slips of the tongue or aphasic naming errors – which are related to the target word *both* in form and semantics, see (5). In an interactive production model (e.g., Dell, Chang and Griffin 1999), such a formally and semantically related word gains activation from both shared semantics (via shared semantic features) and shared phonemes (via feedback from phonemes shared with the target). So, if the probability of producing a certain word substitute depends on its being related to the target word both phonologically and semantically, both types of information can be assumed to be activated at the same time, suggesting an interactive account (but see Levelt 1999).

- (5) a. cat → *rat*
 b. snail → *snake*

Another type of interaction concerns processes working in parallel and combining their results. Interaction between those processes occurs when they operate jointly to arrive at a certain decision or representation by either *coactivation* (feeding into the same decision mechanism), or *crosstalk* between channels (informing each other), or both. The redundancy gain discussed above as a criterion of parallel processing provides also a means to decide between a race and a coactivation model – as a race model (see above) can only account for redundancy gains up to a certain amount. As such a model explains the redundancy gain as a statistical effect resulting from stochastic variation in response time, according to this account the distribution function for redundant trials cannot be larger than the sum of the contribution functions for trials in which only a single target is present. If this inequality predicted by the race model ("race-model inequality") is violated, race models can not explain the redundancy gain in reaction time (see Miller 1991). Therefore, it can be concluded that some kind of interaction occurs: crosstalk or coactivation or both (see Townsend and Wenger 2004, also for an overview of other RT inequalities proposed in the literature).

A type of data which cannot be explained by coactivation alone are congruence effects (Miller 1991). If reaction time does not only depend on redundancy (presence of two entities each of which licence a "yes" response), but additionally on the relatedness between entities to be judged, this cannot be accounted for by a joint summation of independently achieved activations. If a contingency between both entities, such as a high joint probability or a congruity in content (e.g., correspondence between location of a visual stimulus and pitch of an auditory stimulus, both being HIGH or LOW), leads to faster responses, this can be accounted for in terms of coactivation with crosstalk (Miller 1991) or separate activation with crosstalk (Townsend and Wenger 2004).

4. Experimental designs

The basis for drawing conclusions from experimental evidence is the experimental design used – the method chosen to manipulate independent variables and to control for others. It affects both the techniques which can be applied for inferential statistics and the logical inferences to be drawn (together with other factors, such as coherence of data patterns, convergence of results from different sources, etc., see 3.3).

One aspect is the question of whether unrelated or related samples are used. Unrelated samples are those, which are drawn independently for the different conditions to be compared. Related samples are those, in which the same participants are used in all of the conditions, such that the values measured in the different conditions are related because they stem from the same participants. If there is more than one independent variable involved, there is also a mixed design possible. A design, in which unrelated samples are drawn, is also called a *between-subjects design*. A design, in which related samples are drawn, is also called a *within-subjects design*.

Another aspect of the experimental design is the question of how many factors (independent variables) and factor levels are compared. The simplest case is the use of just one independent variable. However, if we are interested in possible interactions between variables, we need to combine several factors. A *factorial design* is one in which all factor levels are crossed. It is usually described by specifying the number of levels for each of the independent variables used. For example, in a 2x2x3 design, the first variable has two levels as well the second one, and the third has three levels. The combinations of the factor levels used are the *conditions* of the

experiment to be compared. So, in the case of the 2x2x3 factorial design, we have 12 conditions altogether. In some experiments, one condition is regarded as a *control condition* relative to which *experimental conditions* can be judged. For example, in order to establish the effectiveness of a bilingual curriculum in preventing reading problems, an appropriate control group (without bilingual curriculum) is needed. In single-case experiments, there might also be a “control variable” included to distinguish treatment effects from spontaneous recovery or change.

Another aspect of the experimental design is the control of those variables whose influence should be eliminated, sometimes called *control variables*. One technique used to control for order effects is *counterbalancing*, which means to use all possible orders of conditions or items (e.g., ABC, ACB, BCA, BAC, CAB, CBA) an equal number of times. If there are too many conditions or items to counterbalance, a frequently used alternative technique is *randomizing*, which means to use a random sequence each time the experiment is performed. Other options are a *latin square*, according to which each experimental block or condition occurs at each possible position (e.g., ABC, BCA, CAB) an equal number of times, or an *inversion* (ABC, CBA). Other variables which might possibly influence experimental results can be controlled by *matching* them (e.g., age, gender) between conditions or by *eliminating* them (e.g., background noise).

The combination of factor levels, control techniques and sampling yields the experimental design. An equal number of participants and/or language materials is assigned to each cell in the experimental design. In a true experiment, participants and/or language materials are randomly assigned to conditions, as it is a central feature of experiments that the factor levels are under the control of the experimenter (cf. Section 2). However, sometimes such a random assignment to conditions (i.e., arbitrary control of the independent variable) is not possible; if instead independent variables are used whose levels cannot be controlled (e.g., native language, bilingualism, etc.; for a review of experimental psycholinguistic methods for studying language disorders see Vorwerg 2010), this is called a *quasi-experiment*. The interpretation of quasi-experiments is more difficult, because it is often unknown what other variables might be confounded with a quasi-experimental variable, and also because a causal relation is not easily established. Therefore, it can sometimes be useful to have several control groups in order to enhance the probability of a causal relationship (e.g., a comparison of children with reading disorder with both an age-matched and a reading-level-matched control group).

5. Specific experimental paradigms

5.1. Experimental methods used in studies of language production

There is a multitude of experimental paradigms the use of which depends on the particular question investigated. In order to study the conditions, under which a certain variant is produced, *frequencies of use* are measured (e.g. in studies of *object naming* or a *verbal localization*). These can also be compared and related to other types of data, such as a *rating of typicality*, *goodness*, *validity* or *usability* of a linguistic expression and also *response time for verification* (see Vorweg 2001).

In *language acquisition research* (see Eisenbeiss 2010, for an overview) children may also be asked to *imitate* spoken language; from the way they reconstruct the utterance, conclusions about their grammar can be drawn. In other studies, the *production* of questions, negated sentences or plural forms may be *elicited* by according questions, sometimes including novel words (e.g., *This is a wug. These are two ...?*; Berko 1958; Chan, Lieven, and Tomasello 2009). A further example is *speeded production experiments*, in which learners produce complex forms as fast as possible and onset time is measured in order to get insight into whether forms are holistically retrieved from mental lexicon or assembled during production.

A different method, which is frequently used, – both with children and adults – is *structural priming*. This term refers to speakers' tendency to repeat linguistic structures heard or produced before (see, e.g., Branigan 2007; Vorweg 2009, for self-priming). So, presenting a participant with a certain linguistic structure may possibly influence the probability that the same type of structure will be produced. This type of priming effect can be used to study interaction in dialogue, the mapping from message to syntax, levels of grammatical processing, the representation of linguistic knowledge, bilingual processing, and relations between written and spoken language as well between production and comprehension (see Pickering and Ferreira 2008, for an overview).

Furthermore, *phonological* and *semantic priming* or *interference* can be used to study the time course of word production (see also 3.4). In word-picture interference tasks, a word presented with a picture slows down picture-naming latencies – depending on the relation between word and picture name. In priming studies related to production, a previously presented stimulus (e.g. a word) affects the subsequent picture or word naming, again depending on the relationship between prime and target (e.g., semantic,

phonological, syllabic, morphological, etc.). The time course of facilitation and inhibition is used to draw conclusions about activations and units used in language production.

Another methodical development used to study language production is *eyetracking*, the continuous registration of gaze and eye movements and their analysis in relation to speech produced. In word production related to visual objects, gaze is assumed to reflect word preparation and therefore used to study aspects of this, such as the locus of (self-corrected) speech errors (see Griffin 2004).

5.2. Experimental methods used in studies of language comprehension

Experimental methods used for examining language comprehension vary widely, depending also on the area of study. Examples of methods used to study *word recognition* include *gating* paradigms (a repeated presentation with increasing presentation time of a word to be “guessed”), *presentation in noise*, *phoneme monitoring*, *shadowing of continuous speech* and *detection of mispronunciation* (see Grosjean 1980, for the gating paradigm and an overview of other paradigms).

Phonological, orthographic, morphological, semantic and *associative priming*, including *crossmodal priming*, can be used to study aspects of word recognition (specifically factors influencing it) and the time course of activation (e.g. the activation of word meanings of ambiguous words with different semantic contexts used as prime). Priming and interference paradigms do also offer a possibility to examine aspects of *bilingual processing*.

In *reading research*, reading times and eyetracking data may be analyzed with respect to difficulty of processing, the visual input in reading and specific aspects of sentence or text processing, such as *parsing* (analysis of syntactic structure). Several *eyetracking parameters* have been developed referring to either single words or regions, some of which are first-fixation duration, gaze duration, skippings, regressions, first-pass reading time, second-pass reading time and total reading time (e.g., Rayner, Slatery, Drieghe and Liversedge 2011).

Syntactic processing can also be studied by *syntactic priming*, *grammaticality judgments*, measures of *sentence comprehension* or the *word detection procedure* (in which participants press a button as soon as they hear a certain target word in a sentence – a response which is delayed after gram-

mational-agreement violations; e.g., Grossman, Lee, Morris, Stern, and Hurtig 2002).

Syntactic as well as semantic and pragmatic processing are further addressed by a number of other experimental techniques, many of which are also used in *language acquisition research* (see Schmitt and Miller 2010), e.g., truth-value judgment tasks (judged generally or in relation to particular situations) and verifications times, sentence-picture matching tasks, enactment paradigms (see also Vorweg and Weiß 2010) and semantic or structural priming.

The *visual-world paradigm* (e.g., Dahan and Tanenhaus 2002) is another way to use *eyetracking* for the study of language comprehension (see Sedivy 2010, for a discussion of the assumptions behind this use of eye-tracking). In this paradigm, eye gaze to objects in a display is analyzed during the processing of speech. As eye movements and speech processing are tightly coupled in situations where language refers to the visual surrounding, a number of issues can be addressed, including word recognition, syntactic analysis and the lexical activation of perceptual features. Typically, appropriate distractor objects (relative to a target object or word) are present in the display, such as those with a similar shape, shared word onset in the name or constituting referential ambiguity, such that gaze trajectories and fixation probabilities of distractor objects allow insights into speech processing mechanisms.

These are just a few examples of experimental paradigms used in psycholinguists. Others, which cannot be addressed here for limitations of space, deal with aspects of prosody, phonotactics, nonverbal communication, pragmatics, figurative language, discourse processing and dialogue, etc. Moreover, a number of different experimental approaches have been developed in order to tackle the question of interfaces and the interplay between different levels of processing discussed in 3.4.

6. Final remarks

The experimental approach provides a valuable tool for studying language processing, and a large number of elaborate and sophisticated techniques have been developed to address research questions which are difficult to tackle. The results of this type of research can fruitfully be compared with research from other methodological approaches and related to studies from other research areas.

The experimental approach may also directly be combined with other methodological approaches – by informing them (e.g., computational modeling, clinical research), by using their data as a basis (e.g., computerized lexicons, word frequency data from corpus linguistics), or by doing joint research and a convergent data analysis (e.g., discourse analysis, see Vorweg and Tenbrink 2007).

While the experiment plays a central role in much of the psycholinguistic research – benefiting also from its interdisciplinary basis –, there are other areas of linguistic enquiry, in which the experiment is also of importance. Specifically, phonetics is a well-established experimental discipline; but experiments are also used in sociolinguistics (e.g., Auwärter 2005) and experimental pragmatics (cf. Noveck and Sperber 2004). Other linguistic disciplines are very much related to psycholinguistics, such as clinical linguistics, computational linguistics and neurolinguistics. Some research areas, such as the relation between language and thinking, as exemplified by the hypothesis of linguistic relativity (cf. Werlen 2002), language attitudes (see Werlen 2007), or bilingualism and language competences (e.g., Werlen, Rosenberger and Baumgartner 2011; Werlen, Tunger and Frei 2010) lie thematically at the intersection of psycholinguistics with other linguistic disciplines. And currently there also some endeavours for joint research programmes with respect to questions of language variation and language change between psycholinguistics, sociolinguistics, historical linguistics, perceptual dialectology, and cognitive linguistics (cf. Vorweg, in prep.).

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Part IV: Writing

Coming to grips with dynamics and complexity. Methodological challenges to real-life writing research

Daniel Perrin

1. Introduction

Linguistics first considered written language, later focused on conversations as processes, and only then rediscovered written language from a process perspective. Whereas psycholinguistic research on writing focuses on key logging and eye tracking to analyze micro processes such as planning between linguistic units in experimental settings, sociolinguistics and applied linguistics start relating writing practices in the field to social macro structures and problems such as societal diversity and change. In doing so, they understand micro development as a methodologically accessible activity which stands for similar, but less accessible developments on higher levels and timescales.

In my article, I discuss the methodological potential of research frameworks in “real-life” writing research, drawing on newswriting as an upcoming field of application. After a short overview of four more traditional research frameworks in the research of newswriting, I focus on Dynamic Systems Theory (DST).¹ I argue that DST thinking fosters appropriate approaches to explaining the complexity of writing in multi-layered real-world contexts. On the one hand, DST provides the conceptual metaphors needed to understand why and how it makes sense to systematically analyze a world in which everything is connected. On the other hand, DST enables researchers to develop empirically grounded models of processes at the edge of chaos – processes such as dealing with time pressure, poor quality pictures and emergent ideas when writing a piece of news.

In this article, I focus on DST’s potential for explaining the dynamics and complexity of writing processes in real-world contexts such as the domain of newswriting.² A newswriting process by an experienced journalist about demonstrations in Lebanon, is referred to throughout, as a case of such real-world writing. On an empirical level, I exploit data from this LEBANON case to show that changing a single word in an emerging news text can mean reframing both the writing process and the text product. On a

theoretical level, I draw on the LEBANON case to explain how and why DST helps researchers conceptualize and model the complexity of news-writing.

First, I situate DST within a set of conceptually related research frameworks that have proved valuable in the investigation of text production (Part 2). Then, I elaborate on the key concepts of DST from five relevant perspectives: Investigating text production processes as dynamic systems means reconstructing their structure and dynamics, that is their elements and relations (Part 3) as well as their processes, their stability and change (Part 4). Beyond explaining what systems actually consist of and do, DST then evaluates dynamic alternatives: what a system, at any state, could do and why (Part 5). Finally, an explanation is needed as to how the dynamic system maintains its identity despite change (Part 6). Such research produces outcomes mapping micro development and macro perspectives: for example, situated knowledge about emergence in collaborative text production, or empirically-grounded models of writing phases (Part 7).

2. Dynamic Systems Theory as a framework for writing research

Research frameworks provide basic ontological, epistemological and methodological assumptions: they offer scientifically-justified solutions to the problem of what can be discovered about which objects of study and why this matters. In doing so, such a framework organizes the way research questions emerge and are formulated, data are gathered and analyzed, findings are generated and interpreted, and theories are developed and applied. Thus, deciding on a particular research framework or combination of frameworks means focusing on particular aspects of the object under investigation – and putting less priority on others. Several research frameworks have proved useful in the investigation of language in general, language use, or even writing in particular (Perrin 2012).

In product-related frameworks, researchers primarily draw on final communicational offers such as written texts or media items in order to scrutinize public discourse from an external point of view. Ethnographic research (EG), in addition, aims at understanding its objects of study from an insiders' perspective and relate it to the researchers' external perspective. Ethnographic researchers are interested in discovering what the people and communities under investigation actually do and why they do it, in other words, why it makes sense to them. Thus, writing research in ethno-

graphic research frameworks focuses on processes of text production and on sense-making practices of writers instead of only analyzing products.

Historically, classical ethnography tends to be limited to single case studies. Writing research can overcome this limitation by combining ethnography with other research frameworks (Table 1):

1. with Grounded Theory (GT), in order to systematically develop empirically grounded theories;
2. with Transdisciplinary Action Research (TD), in order to systematically share knowledge with the practitioners involved and to jointly solve practical problems;
3. with Realist Social Theory (RST), in order to systematically relate situated activity such as language use to social macro structures, such as social settings and contextual resources; and
4. with Dynamic Systems Theory (DST), in order to model conditions that foster emergence and functional change in complex dynamic settings.

Table 1. Combining ethnography with newer research frameworks, with references to exemplary theoretical discussions.

	EG	GT	TD	RST	DST
Aim	relating perspectives	theory building	mutual learning	contextualizing	fostering emergence
Focus	case study	+ generalization	+ real-world problem	+ macro structure	+ dynamics
	Lillis, 2008	Tavory & Timmermans, 2009	Agar, 2010	Sealey, 2007	Agar, 2004

DST originated in biology, mathematics, and physics. Later, it was applied to mental and social processes. Today, DST deals with systems as varied as evolution, weather, business organizations. Recently, DST has widely been viewed as an especially promising approach in research into language use.

In their position paper, Beckner et al. (2009) propose a DST approach to explain how language is acquired and used, and how it changes. Cameron and Deignan (2006), Ellis and Larsen-Freeman (2006), Lantolf (2006), Larsen-Freeman (2006), and MacWhinney (2006) focus on emergence in

the development, acquisition, and use of language. As Larsen-Freeman and Cameron (2008: 18–19), argue, sociocultural, interactionist, systemic, integrationist, and ecological approaches to language (e.g. Vygotski (1978), Halliday (1973), Harris (1993), Sealey and Carter (2004)) overlap with DST in their basic assumption that language use, and mental, linguistic, and societal structures are interconnected.

Systems such as languages are dynamic: they change continually as their elements and contexts interact. In the context of newswriting for example, if journalists invent new words and these words become part of the general vocabulary over time, then language is changed through language use – with impacts upon further language use. DST is a research framework focusing on principles of change.

Depending on the system, change can be discrete, linear and completely predictable, such as when the flow of traffic is controlled by stoplights. In contrast, language change as well as conversations and text production are complex dynamic processes; they are not entirely predictable. Explaining them needs to take into account processes and interrelations from individual to global levels and from short to long-term time frames. Therefore DST treats the complexity and dynamics of its object as integrally as possible.

3. Structures: Zooming through levels and timescales

One of the key questions for DST is what a dynamic system consists of at a given point in time. When DST focuses on structure, it describes the elements and relations of the system under investigation, its nested levels and timescales, the openness for interaction with other systems, and the context.

In DST, a written text can be seen as the frozen state of the dynamic system of newswriting. Different kinds of semiotic elements, such as letters, words, sentences, paragraphs, and pictures, are interrelated in a way that the news item can evoke complex mental representations in the dynamic system of reading or listening to and understanding news. In the Lebanon case, the journalist R.G. produced the following text about demonstrations in Saida (Table 2). It was broadcast on the 14th of February 2007, in the French news program *JOURNAL* of the Swiss public broadcaster SRG SSR.

Table 2. Key pictures and translated text of the news item produced in the LEBANON case. The context: In Lebanon, ethnic and religious diversity as well as expansion plans of neighboring countries are threats to national unity. In 2005 the Lebanese Prime Minister, Rafic Hariri, was killed in a bomb attack. While European media often report on politically motivated violence in Lebanon, this item foregrounds peaceful demonstrations on the second anniversary of Hariri’s assassination.

	<p>00:00:00 anchor’s introduction</p> <p>In Lebanon, on a day of high tension in Beirut where the assassination of R. H, two years ago, is being commemorated, thousands of faithful of the former prime minister poured into Martyrs’ Square this morning in the centre of the Lebanese capital. A demonstration flanked by a plan of maximum security measures. R[...] G[...]</p>
  	<p>00:00:18 offtext</p> <p>The Lebanese do not work on this anniversary day. They instead have come by the tens of thousands from all over the country. From Tripoli in the north or from Saïda in the south. Saïda - the city of Rafic Hariri, assassinated two years ago to the day. They have come by road and some also by the tranquil path of the Mediterranean. What all the demonstrators have in common: the Lebanese flag to express the love they avow for their quartered country which is coveted by troublesome neighbors.</p>
	<p>00:00:47 quote man</p> <p>We are here for Rafik Hariri and all the martyrs. And to say the truth: I protest against Syria.</p>
	<p>00:00:57 quote woman</p> <p>We want culture, education, public transportation, not arms. We wish to learn, make progress, and live a normal life like everyone else.</p>
	<p>00:01:07 offtext</p> <p>The demonstration is orchestrated by the anti-Syrian majority, currently in power but whose legitimacy is contested by the opposition forces, led by the Shiites of Hezbollah. Where the fear of new violence today, is again resounding in people’s heads so much, the two explosions that went off yesterday morning on the Christian mountain very close by. Two unattributed attacks but double the warning to the Lebanese army, the only guarantee of the country’s unity at the moment.</p>

Just like the written text or a writing process, every system consists of interacting elements and relations producing a certain overall behavior at a

given time. In a DST view, elements can be dynamic systems themselves. A newsroom, for example, can then be seen as a dynamic system consisting of other dynamic systems such as individuals, peer groups, organizations, roles, rules, expectations, tasks, products, processes, money, time allocations, and so on. This dynamic system is embedded in contexts such as audience, sources, public sphere, and competitors in media markets. In a TV newsroom, this interplay results in overall activities such as broadcasting at airtimes and conferencing, newsgathering, and newswriting in between (Figure 1).³

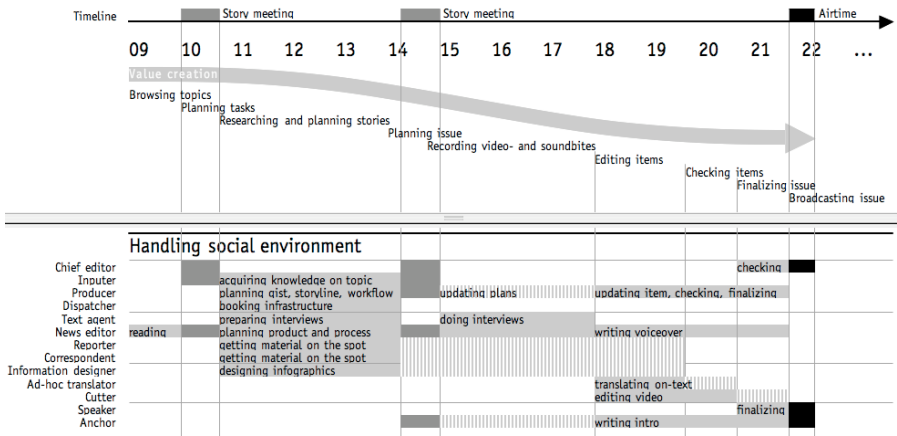


Figure 1. Timeline, roles, and tasks as key elements of the workflow structure in a newsroom.

However, behavior in such a system happens on various nested and interconnected levels and timescales: from the milliseconds of neural processing to the minutes of newswriting, hours of daily production cycles, years of organizational restructuring, decades of professional careers, centuries of language change, and eons of evolution. On some levels such as newswriting or daily production cycles, the agents are mostly aware of their activity, on others, the system behaves beyond the agents' awareness.

Open systems allow and need particular input and output to maintain their stability. Resources such as source texts enter the dynamic system of newswriting from outside; products such as news items are the output. The dynamic system of writing a single news item ends when the deadline is reached or the item is submitted to be broadcast.

Ignoring the deadline when writing a single news item could affect the context of this system, namely the overall system that produces news con-

tinuously. Conversely, the unpleasant experience of lack of content at air-times could trigger a stricter management of deadlines and thus change the contextual constraints for the next newswriting processes. Thus, dynamic system and contexts are mutually and inseparably connected. A dynamic system can initiate changes in its contexts and it can also adapt to changes in its contexts. This is why DST treats context as a part of the complexity and dynamics of a system under investigation.

4. Dynamics: Tracking change in context

What happens with the dynamic system over time? When DST focuses on dynamics instead of structure, it describes how systems change, why this often takes place in a non-linear fashion, and how stability and variability of the system are balanced as stability in motion. Change in the system of writing a single news item for example can take the system from smooth writing-down phases (Figure 2, phases A and B) to volatile phases where the emerging text is restructured (D and E):

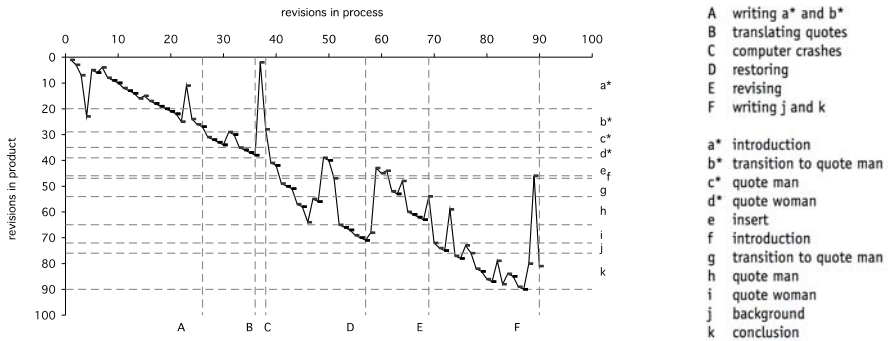


Figure 2. Progression graph of the LEBANON writing process, illustrating linear and non-linear change in the system of writing a news item. Progression graphs indicate how the writer moved the cursor through the developing text. These cursor movements are interpreted as the writer’s shifts in focus. The temporal sequence of revisions in the writing process is represented on the ordinal scale of the x-axis; the spatial sequence of revisions in the text product shows on the y-axis, also ordinal.⁴

In a DST view, systems are always open to change. Elements, relations, and contexts change in their specific timescales as they interact. In this

multilevel flow of change, the future states of a dynamic system continuously depend on the respective present states. In the dynamic system of collaborative newswriting, even highly routinized and standardized procedures such as writing a newsflash or embedding a quote are adapted to context each time they are performed. Moreover, revising a peer's text under time pressure can end in rewriting the item and offhand comments about the peer's writing style; the comments can initiate changes in procedures and policies – which in turn will affect future collaboration in newswriting. Returning to the LEBANON case, a linear flow of words into stretches of language on the screen can suddenly be interrupted, for example in order to delete and replace a previously written word (Figure 3):

¹⁹{Ils sont venus p}¹⁹|₂₀ar la route et même pour certains par
la voie ²⁰[express]²⁰|₂₁²¹{tranquille}²¹ de la Mé-
dit⁴[e|₄]⁴érannée.....|₅

¹⁹{They have come b}¹⁹|₂₀y the road and some even by the path
²⁰[express]²⁰|₂₁²¹{tranquil}²¹ of the Medit⁴[e|₄]⁴erranean|₅

Figure 3. Excerpt and English translation of S-notation, showing deletions in ⁿ[square brackets]ⁿ and insertions in ⁿ{ curly braces }ⁿ. Wherever the writing is interrupted to delete or add something, S-notation inserts the break-character |_n. The subscript and superscript numbers indicate the order of the steps: Right after having inserted “Ils sont venus”, the author jumps forward to delete “express” and insert “tranquille”.⁵

Such complex changes are not random, but neither are they completely predictable. New system properties may emerge when a dynamic system adapts to context. As these new properties can change the way a dynamic system behaves, they also can alter the way the system changes. Therefore, change can be non-linear: sudden, radical, dramatic, turbulent, and chaotic instead of smooth, continuous, and steady. New words on the screen can trigger new ideas in the mind of the writer and thus set off a story in an unpredictable direction.

Another example of the unpredictability of complex processes: in the research project that the LEBANON case was part of, coping with overbooked cutting rooms proved to be an important factor of success on the logistic level of newswriting. However, from a DST point of view, this does not mean that providing additional cutting rooms would augment wellbeing, efficiency or text quality. If a newsroom were a simple system, behaving linearly, then adding more workplaces for cutters would proportionally

shorten the waiting line of journalists wanting to cut their videos. In a non-linear DST scenario, however, easier access to video workplaces can discourage planning and eventually extend the wait. In an alternative non-linear scenario, easier access motivates experimentation; new, more effective strategies of cutting might emerge, the cutting time per news item would decrease, and many of the new workplaces would remain under-utilized.

The emergence of new strategies in the non-linear scenarios can start by varying the cutting procedures or lexical choices and end in different fundamental changes in the overall behavior of the dynamic system. Variability being the seed of change, capturing local variation around stabilized ways of activity is crucial for DST. In contrast to top-down research, DST thus considers variability as data, not as noise. Smoothing away seemingly senseless details and variability, for instance by statistical averaging, would mean losing crucial information for detecting emergence and explaining change. Thus, the lexical change in the example above from “voie express” to “voie tranquille” could be crucial and deserves attention, as discussed below.

5. Evaluation: Identifying the control parameters of change

Of all the various possibilities, what does a dynamic system do at a particular moment in time? When DST focuses on evaluation, it outlines the state space as the landscape of the potential trajectories the dynamic system under investigation could follow on its way from state to state through shifts. Attractors in this state space stabilize the system, and control parameters determine its trajectory.

The overall behavior of a system at a given time is called a state. A shift is the dramatic change between very different states of a system. At a particular moment, a system is in a particular state, performing a particular pattern of behavior. The synopsis of all possible states of the system is its state space. In the example of the newsroom, the state space includes three typical states: conferencing, newswriting, and broadcasting. The simplified system of the newsroom shifts cyclically from one state to the next on its trajectory through the state space. A very different state shift can be observed in the LEBANON case:

After the journalist R.G. had written the first two paragraphs and translated the selected quotes himself from a written English translation received

from the news service, the computer crashed. The translations were not saved, so R.G. had to do them again before writing the last three paragraphs. This crash and other computer problems increased the time pressure, in particular for the cutter who, as R.G. says, then had to rely on R.G. for the story instead of asking critical questions.

The more finely graded analysis of a dynamic system is, the greater the number of states in the state space. In the newsroom, the state of newswriting then might expand to three states: DEFINING THE TASK, WRITING THE TEXT, and IMPLEMENTING THE PRODUCT. The state of WRITING THE TEXT can further expand to SETTING THE GOAL, PLANNING THE TEXT, CONTROLLING THE WRITING FLOW, and REVISING THE TEXT. No matter how fine the gradation, change will happen smoothly within the preferred states and dramatically in the shifts between them.

The states into which a dynamic system preferably moves are called attractors. The simplified system of the newsroom moves cyclically among the three attractors CONFERENCING, NEWSWRITING, and BROADCASTING. Such attractors are called cyclic attractors. In addition to this type, there are two others. The fixed point attractor is where a dynamic system prefers to settle down. In a dynamic system of writing a single news item, a fixed point attractor is reached when the final version of the text is ready for publication. On a more general level, reaching expertise is a fixed point attractor in the dynamic system of a professional's trajectory. In the LEBANON case, the journalist R.G. can be considered close to this attractor:

R.G. (born in 1959) did a degree in modern languages, took a 6-month trip around the world to "20 or 30 countries", wrote four suitcases full of travel diaries that he still reads, and produced short films ("three to four minutes long") for a TV travel show ("*Trip around the World*").⁶ He completed a two-year program in journalism and was a journalist at RADIO SUISSE ROMANDE, the French-speaking public service radio station in Switzerland, for 20 years. In the first 10 years, he worked on the local desk and after that in foreign affairs, which involved a lot of travel.⁷ On the side, he helped set up an agency for which he produced foreign television reportages. R.G. still travels a lot; in the previous year for instance, he was in Lebanon.

In contrast to the fixed-point attractor, the strange attractor is where a system shows high responsiveness and unstable behavior; a minor change in input can produce a dramatic change in behavior. Looking for outstanding pictures among masses of uninteresting ones is such a strange attractor in the trajectory of the dynamic system of newswriting. The system remains

in this highly unstable, critical state until, suddenly, pictures are found that are considered interesting enough as a visual starting point for the news item or parts of it. Influenced by these formerly unknown pictures, the system of newswriting then moves on.

In the LEBANON case, the journalist R.G. received the assignment to prepare an item about demonstrations in Lebanon three hours before air-time. Since R.G. knows his way around Lebanon and had been there recently, he said he felt familiar with the topic. He read an ample amount of text too and received lots of visual material – two hours of images from Lebanese TV, mostly crowds of people with placards. In addition, he obtained video recordings of two interviews with demonstrators. Although he found two passages in them with relevant quotes, he said he found it an effort to make the material vibrant.

An attractor thus draws the dynamic system like a magnet. It is easy for the system to move into a strong attractor, but once it is there, a push is needed to overcome stability and send the system out into the state space again. In the newsroom example, it takes such a push to get people ready for the newsroom conference in time. Towards the end of the conference, it can be hard to finish on time and then start researching. The same goes for the transitions between activities of text production: once in research mode, writers might find it hard to stop gathering information and start writing. In text production mode, some feel more attracted to revising the text they have written so far than to composing new text. Finally, close to the deadline, they might have problems to stop revising and post their items for publication. In the LEBANON case, following the examples of most western media by reproducing the well-known stories of violence was such a strong attractor the journalist had to overcome:

R.G. limited himself to the main topic, “a photograph” of the demonstrations starting on the martyrs’ square.⁸ He consciously abstained from biographical background information and spectacular pictures of the assassination of the former prime minister of Lebanon that the demonstrators were commemorating, since the assassination had already been shown many times. Moreover he decided not to start with pictures of the demonstration themselves. Instead, he first showed the people arriving in masses to demonstrate.

The pushes to overcome attractors come from drivers in the dynamic system. The drivers help the system move around the state space, avoid certain attractors, meet others, and leave them again. Motivation is an example of such a driver, helping a dynamic system of reflexive newswriting

to switch between the attractors of routinized activity and purposeful learning. This means alternating between newswriting routines and breaking out of these routines, trying out new procedures, and enhancing repertoires of writing strategies and techniques. As the drivers control the trajectory of the dynamic system in its state space, they are also called control parameters. Knowing what they are facilitates interventions to the system, for instance in coaching sessions. In the LEBANON case, the journalist's experience and, at the same time, his openness to the unexpected worked as drivers.

In an early, linear phase in the writing process (revisions 1-25, see Figure 2), R.G. wrote the voice-over for the introductory scene. The scene shows how people traveled en masse to the demonstration in boats. Finding these boats in the video material surprised him, he says.⁹ In his very first sentence, R.G. refers to another fact new to him: as he just learns from the news service, the Lebanese had that day off. So the beginning of the product was shaped by details that were new to the experienced journalist.

After a closer look at the pictures that were new to him, he then adjusted a word that turned out to be a key word for the whole writing process. R.G. had first talked about an expressway to describe the direct route over the Mediterranean Sea ("la voie express de la méditerranée"). While interweaving the text with the images he realized that a tranquil path ("la voie tranquille") would better fit the slow journey of a boat. So he deleted "express" and inserted "tranquille" instead (Figure 3). With this revision, cued by new details and R.G.'s language awareness, the design of the item emerged: R.S. started combining strong symbols.

6. Identity: Explaining emergence and stability in motion

Despite change, a dynamic system must maintain its identity; otherwise, there would be no reason to conceptualize it as an entity in space and time. How does the dynamic system persist in the face of change? When DST focuses on identity, it explains stability in motion, cycles of emergence in the light of co-adaptation and self-similarity.

As change never stops, any perceived stability of a dynamic system is stability in motion, an equilibrium in continuous adaptation and change – for a certain period, between more dramatic phases of change.¹⁰ Changes on one level of a dynamic system can lead to categorically new, emergent properties on a higher level.

Such emergence happens, for example, if revising and criticizing single news reports triggers changes in style policies or if missed deadlines stimulate a media organization to optimize its workflows. The emergent new properties on the higher level of the dynamic system then affect activity on lower levels, for instance stylistic choice or process planning in newswriting. Whereas activities such as qualified criticism or missing deadlines can be identified *ex post* as some of the reasons for the emergence, it is hardly predictable which specific activity will cause a shift in state. Thus, emergence produces a new whole which is not reducible to and not explainable by the sum of its parts.¹¹ In the LEBANON case, deciding on the formulation of “*voie tranquille*” provides the journalist with the idea of using leitmotifs: strong symbols standing for key properties, such as tranquility, that recur and scale throughout levels and time frames of the object.

With “*tranquille*” R.G. found the leitmotif of his item. He says that he loves the adjective because it corresponds not only to the image of the boats but also to the tranquility of the demonstration. He expects the “*tranquil*” to resonate in the minds of the audience.¹² Just as consciously, he talks about using the term *drapeau libanais* (Lebanese flag) as a symbol of the demonstrators’ desire for political independence. The same is true for the term *résonnent* (resonate): explosions from Syrian terror attacks had not simply happened the previous day they were reverberating in the minds of the demonstrators.

It is through cycles of such emergence that a dynamic system evolves – and may change fundamentally on particular levels over time. In newswriting, new procedures, skills, policies, workflows, and technologies emerge. However, the system maintains its overall identity as long as salient properties change in line with contextual changes. Newswriting is, after centuries of change, still bound to investigation, facts, relevance, recency, and broad impact in a context of public discourse which has also changed in similar ways to newswriting itself. In the LEBANON case, this means mapping traditional expectations of Swiss media politics with new media market demands:

R.G. overcame the critical situation of using brash stereotypes when under time pressure. Instead of catering to the market and resorting to predictable images that could overshadow publicly relevant developments, he absorbed his source material, listened to what was being said, and discerned what was important in the pictures. In doing so, he was able to discover a gentle access to the topic that allowed him to produce a coherent and fresh

story and at the same time managed to reflect the political finesse required by his employer's remit of promoting public understanding.

Changing in line with contexts means changing in mutual response, in co-adaptation and, in the long term, co-evolution. Elements and relations of a dynamic system perpetually interact with one another, within and beyond the system. Thus, emergence on one particular level of a dynamic system motivates change throughout the system, the connected systems and the context – and feeds back to that level as the co-adapted context fuels future activity. That is what happens if faster technology accelerates newswriting and enables tighter deadlines, which call for even faster technology. The behavior of a dynamic system changes, but since the context likewise changes, the system maintains its identity – dynamically.

Self-similarity is another characteristic of dynamic identity. Change happens along scalable patterns, self-similar on several levels and time-scales, such as tranquility in the LEBANON case. However, the emergent solution in the critical situation of this journalist's writing process also makes a case for emergent solutions to similarly critical problems within conflicting expectations on more general levels. On an institutional level, emergent solutions are needed by R.G.'s employer, the Swiss public service provider SRG SSR, which has to find its way out of increasingly intense conflicts between the traditional public mandate and the pressure of media markets. On a societal level, emergent solutions are urgently needed by journalism in the face of media convergence.

Public service broadcasting companies are among the most important broadcasting companies in Europe. In Switzerland, the public broadcaster, SRG SSR, also has the highest ratings. As a public service institution, SRG SSR has a federal, societal, cultural, and linguistic mandate to fulfil: to promote social integration by promoting public understanding. "In their programs SRG SSR promotes understanding, coherence, and exchange among the parts of the country, linguistic communities, cultures, religions, and social groups [...]" (Translation of the programming mandate 2007, article 2, paragraph 2).

As a media enterprise, though, SRG SSR is subject to market and competitive forces. Losing audience would mean losing public importance. Therefore, the mandate presupposes that reaching the public will promote public understanding. In the research project in which the Lebanon case was analyzed,¹³ the researchers investigated how those working for the broadcaster deal with the following tasks a) fulfilling their public duty by providing programs and items that contribute to the public debate and pro-

mote public understanding, while also b) actually reaching the public in an increasingly competitive media market, and finally c) dealing with growing economic pressure and increasingly faster technological change.

The overall findings show that the knowledge of how to bridge the public mandate and market forces cannot be identified in executive suites, but in newsrooms. Whereas the managers usually are frustrated by the expectations of media politics, some experienced journalists find solutions to overcome the conflict between the public mandate and the market. These solutions tend to emerge when the journalists tackle complex and unexpected problems in critical situations within their daily routines, as R.G. did.

The following conclusions could be drawn from these findings: The conditions for emergent solutions in news teams need to be systematically improved top-down by media politics and media management, and the tacit knowledge involved must be systematically identified bottom-up at the workplaces and then be made available to the whole organization. Based on these recommendations, the stakeholders working in media policy, media management, media practice, and media research have set up follow-up activities for knowledge transformation, such as systematic organizational development, consulting, coaching, and training.

7. Outcomes: Conceptualizing and modeling complex dynamics

Doing research in the framework of DST means exploring behavior within and across very different levels and timescales. As DST considers everything to be connected with everything else, decontextualizing and atemporalizing single phenomena is out of the question. Instead, DST research foregrounds certain aspects, such as the role of emergence in individual writing processes, and investigates them in more detail while remaining open to contextual behavior that might explain change. This calls for multi-method approaches combining in-depth case studies and large corpora as well as analysis and modeling.

Case studies can reveal where, when, how, and why change happens on the micro level of situated activity. As the LEBANON case has shown, a new pattern of process management or product design can emerge in the critical situation of newswriting when a journalist tries to juggle conflicting expectations. If the new pattern succeeds, it might become part of that journalist's repertoire. Understanding such micro processes means shifting from a static view of newswriting (see Section 1, above) to the dynamic perspec-

tive of DST (Section 2). An evaluation perspective (Section 3) identifies control parameters of micro change. Finally, an identity perspective (Section 4) allows us to see the micro development as representing a principle that also underlies changes on higher levels and larger timescales.¹⁴

Tracing micro development needs dense corpora with rich procedural data over short periods of time: the activities of collaborative writing and conferencing in the newsroom have to be captured as broadly and in as much detail as possible. In contrast, tracing change on macro levels and timescales of the newsroom, journalism, or even society at large needs elaborate corpora. The samples have to be wide enough to allow for generalization; the sampling intervals close enough to infer variability and shifts in state; and the data collection prolonged enough to grasp long-term change. Combining dense and large corpora enables researchers to situate micro development within the context of macro development.

In the research project, the LEBANON case study is part of, newswriting was conceptualized as balancing practices in a complex context of conflicting expectations. Newswriting, then, was metaphorically modeled as a helix of 16 interacting fields of situated activity in an environment of conflicting expectations (Figure 4).

The dynamic system of situated text production can be described in terms of fields of relevant activity (Figure 4). It begins when writers understand and accept a production task (Defining the task) and ends when they send the results of their work along the production chain, such as to colleagues who assemble news programs from individual items (Implementing the product). In between, reading processes (Source reading and Product reading) interact with writing processes on various time frames and scales (from grapheme to text version levels). In the inner circle of the writing process, four phases recur and overlap, each dominated by activities which contribute, on their specific levels, to the incremental production of the text. Goal setting typically focuses on the text as a whole, Planning on sequences of text parts such as paragraphs, and Controlling on the formulations under construction. Monitoring, in contrast, traces the results of the production process throughout all of the levels.

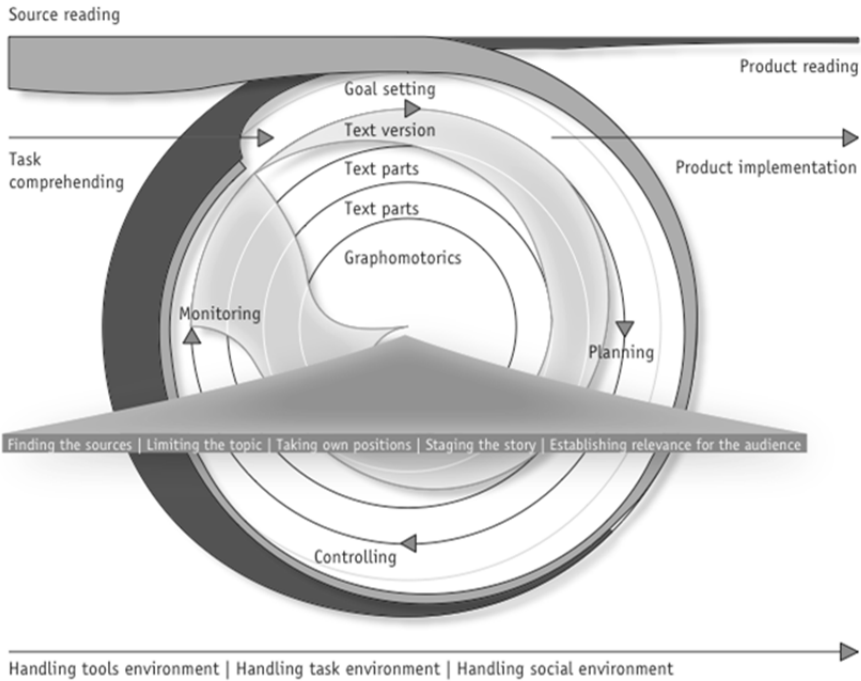


Figure 4. The dynamic system of situated text production.

However, it is not only existing and emerging texts that writers deal with when producing texts. They also handle their social environment, such as interactions with superiors and co-writers, the tools environment, such as workplaces and computers, and the task environment, such as other jobs that need to be done at more or less the same time. Whereas the eleven fields outlined above refer primarily to managing processes, the five other fields of activities are directly oriented to the emerging text products. These are: identifying sources and integrating source materials (Finding the sources); deciding on and sticking to the subject (Limiting the topic); defining and communicating one's own role and stance in the text (Taking own position); addressing presumed needs and interests of the audience (Establishing relevance for the audience); and mapping linguistic varieties, styles, genres, and dramaturgy (Staging the story). In the Lebanon case, the emerging solution of the "tranquil" leitmotif helped the journalist to produce a coherent and fresh story (Staging the story) and at the same time to present new information that reflects political subtleties (establishing rele-

vance for the audience) – and thus to overcome the conflict between market demands and the mandate of promoting public understanding.

However, DST can be more than a useful metaphor in scientific approaches to writing processes. Research can also proceed heuristically, starting with assumptions instead of data. In this case, the processes of change in a dynamic system are reconstructed through dynamic models: simulations and analogies which are tested against reality for best fit. The outcome of a computer simulation is compared with observations of the real-world system under investigation. Relations are redesigned and parameters adjusted until the model behaves like the observed reality. The dynamic model simulates change through iteration of algorithms: rules are applied in loops where the output of one loop is the input for the next. Thus, the mechanisms of change in the model are exactly known and can be taken as metaphors for the principles of change in the real world system.

Based on data of hundreds of cases similar to the LEBANON case, models of writing phases have been extracted and are being tested. In a subsequent interdisciplinary research project,¹⁵ writing phases will be modeled as time periods with predominant activities. These are identifiable in the data throughout scales and time frames by more or less homogeneous (predictable) time series dynamics between critical states (with rather unpredictable ends). First findings show, for example, that the two dominant progression types of the LEBANON case, linear writing (phase A in Figure 2 above) and chiseling (Phase E) support a prediction of successful text production in terms of coherence, whereas chaotic jumping back and forth as dominant phase would allow for predictions of coherence gaps.

Thus, changing one single word, depending on the context, can take the dynamic system of writing to strong symbols and leitmotifs – or to weak cohesion and coherence. It is a tricky, complex matter, and that is what makes writing research and DST a promising couple.

Notes

1. As the purpose of writing research is to explain processes and thus dynamics, I prefer the term *Dynamic Systems Theory* (DST) to other widespread terms which focus on other key properties of such systems, such as complexity, non-linearity or adaptivity. In my summary of DST, I draw primarily on Larsen-Freeman and Cameron (2008), who broach the issue of “the dynamics of written discourse” (Larsen-Freeman and Cameron 2008: 185–188) – a reasonable starting point for combining DST and linguistics of newswriting.

2. For further discussions of the domain concept see Werlen (2004). I would like to take the opportunity at this point to express my warmest appreciation to Iwar Werlen, who has sustainably inspired me to investigate language use in real-world contexts and writing in professional domains in detail – always keeping the “so what?” question in mind.
3. For recent discussions of contexts of newswriting see for example Cotter (2009) or Catenaccio et al. (2011).
4. For further discussions of progression graphs in particular and progression analysis in general see Perrin (2003), Perrin (2006), or Perrin and Ehrensberger-Dow (2008).
5. S-notation was developed by Kerstin Severinson-Eklundh and her research team. For further discussions see for example Kollberg and Severinson-Eklundh (2002) and Severinson-Eklundh and Kollberg (2003).
6. *tsr_tj_070212_1220_guillet_frame*, lines 16-18: “c’était déjà pour la télévision, pour une émission qui s’appelait *la course autour du monde*, c’était pendant mes études de lettres”
7. *tsr_tj_070212_1220_guillet_frame*, lines 36-39: “et après dix ans à la rubrique internationale où j’ai fait passablement de voyages, de reportages à l’étranger, pendant dix ans ça fait pas mal de séjours et reportages à l’étranger”
8. *tsr_tj_070214_1230_guillet_libanon_review*, lines 946-954: “moi je fais une photographie de ce qui se passe pendant la matinée, puisque ce premier sujet passe à douze heures quarante cinq. au liban cette manifestation, elle draine une foule immense, comme on le voit sur les images, et je dois montrer que cette foule répond à un certain nombre d’aspirations, et je dois donner les clés pour la personne qui n’y connaît pas grand chose”
9. *tsr_tj_070214_1230_guillet_libanon_review*, lines 985-987: “je fais attention vraiment aux images, par exemple je ne m’attendais pas à voir ces bateaux, ça je savais que j’allais le mettre”
10. Larsen-Freeman and Cameron (2008) illustrate this concept of dynamic stability with the “constant adjustments [that] are required to overcome the force of gravity in order for us to stand erect on two feet” (87) and with swimming: “without the extra input of energy produced by waggling hands or feet, floating would cease. [...] the movements of the swimmer are adaptations made in response to the environment – to the need to prevent sinking.” (33)
11. Holland (1998: 2), describes this phenomenon as “much coming from little”.
12. *tsr_tj_070214_1230_guillet_libanon_verbal*, lines 180-185: “j’aime bien cet adjectif parce que pour l’instant, les mots ils résonnent dans la tête des gens, tranquille c’est pour l’instant le point de cette manifestation, elle est plutôt bon enfant pour l’instant, parce qu’il n’y a pas eu de heurts, donc je mets *la voie tranquille*”
tsr_tj_070214_1230_guillet_libanon_review, lines 1019-1024: “mais dans toutes les images que j’ai vues pour l’instant, c’est une manifestation qui ne dé-

génère pas, donc si je peux saupoudrer le texte de mots qui résonnent justes par rapport à ce qui a l'air de se passer sur place, je les garde”

13. The research project IDÉE SUISSE: LANGUAGE POLICY, NORMS, AND PRACTICE AS EXEMPLIFIED BY SWISS RADIO AND TELEVISION was funded from 2005 to 2007 by the Swiss National Science Foundation. It is part of the National Research Program 56, LANGUAGE DIVERSITY AND LINGUISTIC COMPETENCE IN SWITZERLAND, 2005-2010. Outlines and reports of the program and its projects (in German, French, and Italian) can be found on www.nfp56.ch. For a discussion of the project see, e.g., Perrin (2011).
14. Thelen and Corbetta (2002) describe the study of micro development as “the study of the processes of change, not only the endpoints.” (59) “The goal of microdevelopmental studies is to understand change itself: what are the mechanisms by which people forgo old ways of behaving and adapt new ones.” (60) Micro developments are “the motors of change” (59). Because of the self-similarity of dynamic systems, it can be assumed that “the processes that cause change in a matter of minutes or hours are the same as those working over months or years. In other words, the general principles underlying behavioral change work at multiple time scales.” (60)
15. The aim of the MODELING WRITING PHASES project, funded from 2011 to 2013 by the Swiss National Science Foundation, is to statistically model and explain writing phases as temporal procedural units. Typical dominant writing actions such as “formulating” or “source reading” are identified and related to writing phases. The project attempts to overcome limitations of traditional writing phase concepts that are based on introspection or single case studies. On the methodological level of the project, DST-informed statistical techniques beyond those normally associated with corpus linguistics are developed. For a discussion of initial results see Perrin and Wildi (2010) and Perrin et al. (2011).

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Evolving methods for written representations of signed languages of the Deaf

Penny Boyes Braem

1. Introduction

Like all human languages, signed languages used in Deaf communities are analyzable according to many of the same linguistic models and constructs that are used for oral languages. The signed language linguist, however, is confronted with methodological problems stemming from the visual/corporal modality in which these languages are produced and perceived as well as the pervasive iconicity at all levels of the language. This chapter reviews some of the major methodological problems connected with the written representation of these languages, at the level of the isolated sign as well as signed texts, and then describes some newer projects and methodologies, many of which not only reflect revised theories that more accurately represent these languages but also utilize recent advances in computer and media technologies.

2. Research and written forms of data

Modern research on the signed languages used in Deaf communities began only in the 1960s, especially with Stokoe's work on American Sign Language (Stokoe 1960; Stokoe et al. 1965). In the following decades, several different kinds of methodologies have evolved for studying many different linguistic, psycholinguistic, sociolinguistic and neurolinguistic aspects of signed languages, not all of which can be described here. The focus of this discussion will be on one of the most basic methodological challenges faced by most of these research studies: How to transcribe, notate and/or write this visual/corporal language that has so many iconic elements.

A 2009 lecture series at the University of Bern invited speakers from different disciplines to discuss the relevance for natural and formal languages in the sciences of Ludwig Wittgenstein's proposition from his *Tractatus Logico-Philosophicus* first published in 1922 (Wittgenstein 1990, Prop. 7): "That about which one cannot talk, one must remain silent" ("Wovon man nicht sprechen kann, darüber muss man schweigen"). In my

contribution to this series, I proposed further restricting this proposition to “That which one cannot write down, one cannot research”. Here, ‘writing down’ would include using script, symbols, diagrams or models and is based on the importance of a written form for development of science and scientific thinking. Goody (1987:76) argues that the development of science is based on accumulated records of ‘proofs’, which other scientists and other generations can review skeptically and improve upon.

Of course, sign language researchers have raw data in the form of videotapes of signing, just as unwritten ‘oral languages’ can be documented with tape recordings. However for research purposes, videos or recordings alone are not sufficient. One cannot make generalizations, formulate linguistic rules, conventions, or propose models if descriptions of the language can’t be put in some written form, allowing one to look at them again and again, to share them with present and future generations of research colleagues of one’s own and other signed languages.

The discussion that follows will focus on difficulties of written forms of these languages, related to two basic factors: the visual/corporal modality of these languages and the issue of iconicity.

3. Modality and the difficulty of representing signed languages

Signed languages are produced and perceived in the visual/corporal modality. Unlike oral languages, signed languages can use the 3-dimensional space surrounding the signer for linguistic purposes. Pronominal references are often made in signed languages by establishing and then referring back to directions or locations in the ‘signing space’. The location, orientation and/or movement of agreement verbs are coordinated with these spatial (abstract as well as concrete) references, as are verbs indicating source and/or goal of actions. The referents involved in locative verbs are often not indicated with prepositions (on, under, etc.) but rather by directly indicating their spatial arrangement. Most signed languages also have developed spatial systems for a variety of temporal references, using several different kinds of spatial ‘time-lines’ to indicate present, past and future times as related either to the present (tomorrow, in two days, etc.) or some other specified temporal point (‘before I go on vacation’). (Engberg-Pedersen 1993, for example, describes the timelines used in Danish Sign Language.) A written representation of signed languages must therefore be able to adequately show all these linguistic uses of three-dimensional

space, not only in single lexical items but also in grammatically modified signs in signed texts.

The simultaneity of many of the linguistic components in visual/corporal languages in both production and perception also poses challenges for written representations (Vermeerbergen et al. 2007). One of the earliest phonological findings about signed languages was that the manual sign could be described by four parameters: the hand's handshape, its location, the orientation of the palm and fingers, as well as their movements. (For an overview of sign language phonology, see Klima and Bellugi 1979, Brentari 1998.) In some signs, the components in these parameters can be modified for phonological, semantic or morphosyntactic purposes. For example, by modifying the location and movement of an agreement verb, different pronominal references can be made; the sign for 'ask', for example, moves in different directions to express 'I ask him' vs. 'He asks me'.

Productive forms are also very prevalent in all sign languages. In the 'productive' vocabulary, change of the handshape and orientation alone can indicate, for example, whether a 'single person' is moving, or a 'large vehicle' or a 'two-wheeled vehicle' or a 'small animal'. As some oral languages, such as Navajo, add this information in the form of lexical classifiers, many sign language researchers also refer to the sign language productive forms as 'classifier signs'. (See Emmorey 2003 for an overview of this research.) Several factors influence these forms in signed languages, including not only lexical standardization and template visual representation, but also cognitive, processing, ease of production and context factors. In her study of classifier forms in different sign languages, Engberg-Pederson (2010) provides a good discussion of these factors, which also draws on Talmy's (2000) description of foregrounding and backgrounding in spoken languages.

Productive forms provide the possibility of signing different meaning on each hand, which correspondingly increases the number of simultaneous linguistic units. For example, one hand can convey 'a tree is located' while the other hand shows a moving auto, to give the meaning 'an auto crashes into the tree'. A referent can be maintained in one hand, while the other hand signs a phrase, a clause, or a sentence pertaining to that referent.

Adding to the complexity of these simultaneous components are the 'non-manual' signals, which signers co-produce on the face and with the upper body. Similar facial or body signals used by speakers are often categorized as 'non-verbal' communication, and hence, being 'non-linguistic', are often omitted in transcriptions of spoken languages. It's not so easy for signed language linguists to relegate all simultaneously produced facial and body signals to the non-verbal, no-need-to-transcribe realm, as these

signals can operate linguistically at the semantic, and especially the morphosyntactic, prosodic and discourse levels (Wilber 2000; Pfau and Quer 2010; Sandler and Lillo-Martin 2006; Reilly and Anderson 2002). Research on several different signed languages has indicated that components of the upper face (eyebrows, eye shape) tend to be used to indicate sentence types (questions, relative clauses, etc.) whereas components of the lower face (mouth, cheeks) are used for more adjectival/adverbial information indicating the size, shape, ease, difficulty etc. Direction of eye gaze, as well as whole facial expressions and body postures are used at the discourse level for identifying discourse referents (see, for example, Cuxac and Pizzuto 2007, 2010). These signals are often used in ‘constructed speech’ or ‘constructed action’ sequences. The signer often makes rapid shifts between referents with these simultaneous signals, which can be the only means by which the viewer knows who is doing what to whom. Another kind of simultaneous non-manual signal found in many signed languages are ‘mouthings’, movements of the mouth which resemble pronunciation of oral language words or word parts and can have functions at the lexical, discourse and prosodic levels (Boyes Braem and Sutton-Spence 2001).

These simultaneous manual and non-manual components occur very often in signed discourse. They make the language a delight to watch, but, together with the linguistic use of the 3-dimensional signing space, a devil to notate. So how do researchers represent these visual languages? Interestingly, and somewhat bizarrely, a tradition has grown up of notating single lexical items with one system and transcribing signed texts with a completely different system.

4. Written representations of signs in isolation

In the standard literature on writing systems, there is almost no discussion of systems for signed languages. Rogers (2005) and Daniels (2001), for example, make no mention at all of signed languages. In the over 800 page earlier version of Daniel’s *The World’s Writing Systems*, the only reference that has tangential relevance to signed languages is a two-page description of ‘Movement Notation Systems’ (Daniels and Bright 1996: 862–864).

In fact, several different kinds of systems have been developed for the written representations of different aspects of signed languages for different purposes (see Miller 2001 for a general overview as well as Van der Hulst and Channon 2010 who discuss various systems of writing, notating and

coding sign languages and compare them to systems developed for oral languages.)

Here, three of the most widely used systems for representing the form of single signs in isolation will be briefly described: Stokoe and Hamburg Notation Systems (HNS), SignWriting (SW) and the Berkeley Notation System (BNS).

4.1. Stokoe and Hamburg Notation System (HNS)

One of the most widely used phonetic notation systems for forms of signs is HamNoSys (HNS). This system is based on the Stokoe Notation System, which was developed in the 1960s for American Sign Language (Stokoe 1965), but its approximately 150 symbols have been adapted and expanded for use with other sign languages (Prillwitz and Zienert 1990, Hanke 2004, Smith 2010). The symbols of both the Stokoe and the HNS notations are primarily for the manual components of the sign. A great advantage of the HNS system is that the symbols are a Unicode font that can be typed and hence all components are electronically searchable. The notation process has been made easier by the development of a signing ‘Avatar’, which performs the sign according to the notation, giving the person notating immediate feedback on the correctness of the notation (Figure 1).

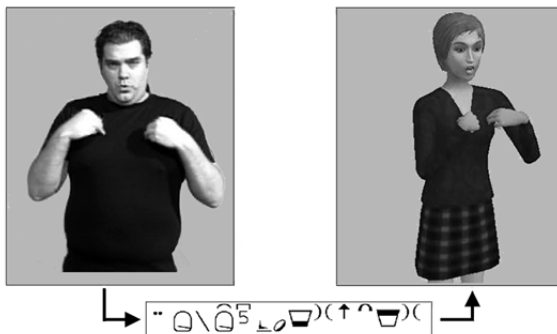


Figure 1. German Sign Language sign meaning ‘morning’: videotaped signing and the avatar reproduction based on the HamNoSys notation of the sign (Images from Morrissey et al. 2010)

At the present time, HamNoSys symbols do not adequately notate the non-manual aspects of signing (although preliminary steps have been taken to add this in the future). Another disadvantage of HNS is that its essentially linear representation of a single sign can be quite long and complex,

making it unwieldy for reading of sequences of signs in phrases, much less in lengthy texts. Figure 2 shows an example of the HNS notation of a sentence that means ‘Goldilocks is wandering in a deep forest’, and involves semantically modified forms of the signs meaning Goldilocks, wanders, and forest.

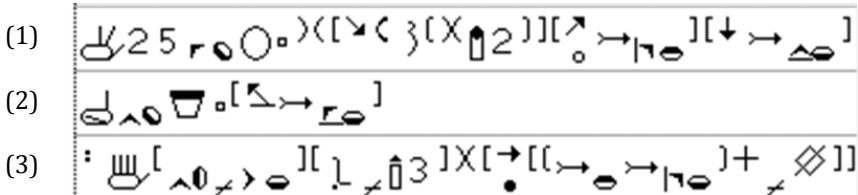


Figure 2. Example of the use of HamNoSys to represent a signed sentence meaning ‘Goldilocks is wandering in a deep forest’: (1) GOLDILOCKS (2) WANDER (3) THROUGH-FOREST (Bentele 1999: <http://sign-writing.org/forums/linguistics> No. 9 Writing the Same Signs in Different Transcription Systems: HamNoSys)

4.2. SignWriting (SW)

SignWriting (SW) is based on dance notation, which has been adapted for writing sign languages (www.signwriting.org). This writing system is intended to be used for everyday communication, including emails and text messages, and for writing down signed stories, poetry, history, etc. The advantages of SW are that the symbols are quite iconic and fairly easy to learn and that many non-manual components of the face and eye gaze direction are also represented. Many placements or directions in the signing space are shown graphically. An additional advantage of this system is that, because these non-manual and spatial components are represented, the signing can be reproduced from the written description alone, without reference to the video data. Di Renzo et al. (2006) found that this ‘reproducibility’ was true not only for the original transcriber of the Italian Sign Language texts but also by other signers who had never seen the original video data. Figure 3 is an example of SW used to represent a retelling of the story ‘Noah and the Ark’ in Swiss German Sign Language (Deutschschweizerische Gebärdensprache – DSGS). The symbols are to be read vertically, from top to bottom. English glosses have been added here to make the succession of signs clearer for the reader. The repetition of the sign to the left and right of the signer is a technique for indicating multiple instances of an event in this language.

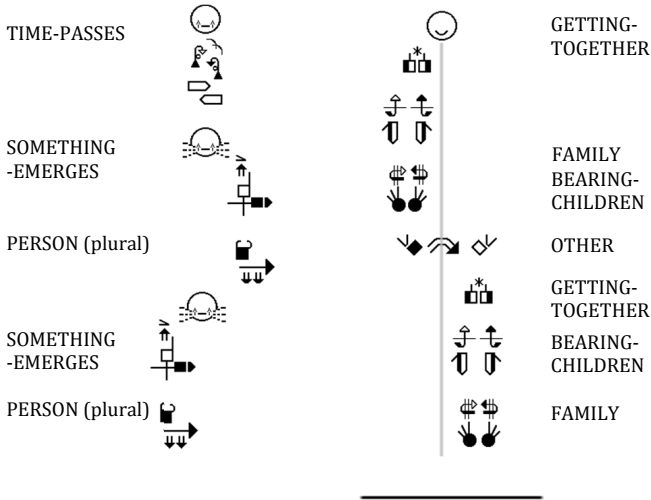


Figure 3. Example of SignWriting used for a sentence from a Swiss German Sign Language narration: ‘After some time, people appeared; they formed groups, bore children, and founded families.’ The repetition of the sign to the left and right of the signer is a technique for indicating multiple instances of an event. (Boyes Braem 2002)

One disadvantage of SignWriting is that it is sometimes unclear if the symbols are descriptions of the sign at the phonetic or the phonemic level. The founder of the system, Valerie Sutton has written that SignWriting “most definitely has been evolving from phonetic to phonemic. It has also gone from phonemic to phonetic at times, depending on the writer’s needs” (Sutton 1998). The writing has been used, with more or less detail, for different purposes, resulting in more phonemic descriptions for lexicons but also more phonetic descriptions for signs in the transcription of sentences from signed texts. Another drawback for linguists is that the handshape and orientation parameters, which have been found to be phonologically linguistically independent, are conflated into one SW symbol, the orientation being indicated by the white and black portions of the symbol for the handshape.

SignWriting is not yet defined in Unicode, although recent proposals have been for this (<http://philippebeaudette.com/signwriting-goes-unicode/>). At the present time, although SW symbols can be electronically entered by clicking on and dragging a symbol, the symbols and their combinations are not stored as fonts but as images. Consequently, the researcher cannot electronically search separate symbols for linguistic components within the image. Other linguistically important information (such as the spatial

relationship of an articulator to another articulator, to linguistic landmarks of the body or linguistically significant spatial loci in the signing space) is also only indicated graphically, is un-coded and hence unsearchable.

Having said all this, it should be remembered that SignWriting was not developed for linguistic research purposes but primarily as a way of writing the language for everyday use. Thus, like writing systems for oral languages, it omits many factors that might be of interest for linguists. Pizzuto et al. (2008) found in their research on Italian Sign Language (LIS) that SW, as a writing system alone, could nevertheless have a value for research. Noting that for oral languages the existence of writing systems not only advanced the standardization processes of the language but also was a precursor to the development of transcriptions systems for research purposes, they argue that more widespread use of a writing system might also be a necessary precursor to developing adequate form/meaning transcriptions of signed languages. They feel that SW

has the potential for encoding structures and morphosyntactic organizational patterns that are highly specific of [signed languages], and that merge not only in their face-to-face form but also...in their written form. (Pizzuto et al. 2008: 5)

4.3. Berkeley Notation System (BNS)

Another writing system that has been developed for signed languages is the Berkeley Notation System (Hoiting and Slobin 2002). This system is analogous to the CHILDES system for annotating written forms of oral languages especially for acquisition studies. A disadvantage of the BNS for notation of single signs is that it notates the meaning, but not the form of the morphemes.

5. Representing signs in sentences and longer texts

5.1. ID-Glosses

Primarily in order to make transcriptions of sign sequences more easily readable and searchable, researchers have, over the years used a convention of representing signs in signed discourse with 'ID-glosses'. These glosses are written words from the oral language used in the same region as the sign language. They are not full translations of the sign but should reflect

part of the meaning of the sign lemma. To help distinguish words used as glosses from normal words or from full translations, they are written in all caps, and are either uninflected forms or stems of the oral language word. Glosses can be used alone to represent the signs in a phrase or sentence (WOMAN SLEEP: *The woman is sleeping*) or they can be embellished with other information to give additional linguistically relevant information. For example, signs functioning as proforms for personal pronouns can add information about the grammatical person involved (PROFORM_2 TELL PROFORM_3: *You tell him/her*). Other kinds of signs, for example those involving locomotion or location, can be appended with a wide variety of ad hoc abbreviations to describe where the sign is made or moving in the signing space (side-left_VEHICLE-MOVES_side-right: *The vehicle moves from here to here*). The main advantage of these glosses for researchers is, in addition to their readability, that they are machine searchable.

Despite their wide use by signed language researchers, glosses pose many problems for representing signs both in isolation and in signed texts. Pizzuto et al. (2006) point out that sign language researchers have used oral language glosses as the primary and only representation of the sign, as opposed to the use of glosses for oral languages where the gloss always accompanies another, primary representation of the form. The example in Figure 4 contrasts the use of glosses for ‘He/she brought it’ in the oral language Yoruba, a Nigerian language, with glosses for signs having a comparable meaning.

- (1) Use of glosses for oral languages, here the Nigerian language Yoruba for the sentence meaning ‘He/she brought it’ (Pulleyblank 1987: 988)

ó	gbé	e	wá
he/she	carry	it	come

- (2) Use of glosses for signed languages for a meaning comparable to that in (1)

INDEX-a	INDEX-b	BRING
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Figure 4. Comparison of the use of glosses (1) for oral language and (2) for signed language (Pizzuto et al. 2006:4)

The glosses for the signs provide no way to retrieve the sign’s form. The ‘gloss’ BRING, for example, gives no inkling of how this sign is made. Pizzuto and Petrandrea (2001) point out that the use of glosses can also misrepresent the structure of signs and signed discourse. There is a further serious problem of meaning equivalency, i.e. of falsely attributing all the meanings (and word class) of the oral language word to the sign.

Finally, there is always a danger that different transcribers will use different glosses for the same sign, or the same gloss for different signs. For example, the gloss KRANK ‘sick’ has been used for different Swiss German (DSGS) signs, all of which have different forms and meanings (Figure 5).

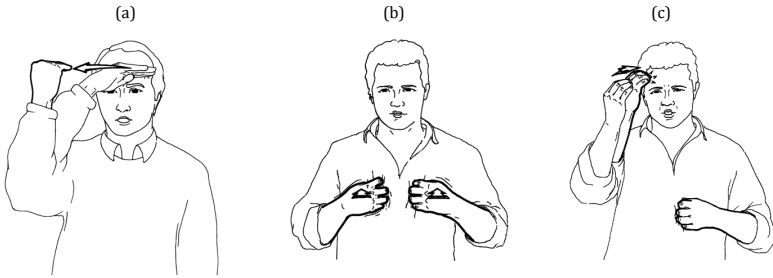


Figure 5. Example of one gloss (KRANK/sick) being used to represent different signs with different meanings: (a) physically sick, (b) psychologically sick, (c) cognitively sick (Boyes Braem 2005a)

5.2. Tiered Transcriptions (handwritten and in Excel)

One way of surmounting the representation problems described above is by transcribing different components of the signing on separate tiers of a transcription. At the minimum, there are tiers for glosses for the manual signs in the dominant and non-dominant hands. Additional tiers can annotate features which are not clear from the glosses, for example, non-manual components, constructed speech or action, etc. Depending on how detailed the analysis is, the resulting transcription can resemble a musical score for a single flute or a many-tiered score for full orchestra. The example in Figure 6 shows one of the first transcriptions of Swiss German Sign Language (DSGS), which was written in the spreadsheet software Excel (Boyes Braem 2001). Selected key points of the transcription are annotated with the time code of the original video data, but the transcript itself is not linked to the video data.

Gruppierung	6								
Zeit-Anfang	0.415	0.417	0.423	0.43	0.438	0.444	0.447	0.456	
Zeit-Ende	0.417	0.423	0.429	0.438	0.443	0.447	0.455	0.466	
Kopf/Kinn	Koo								
Körper									
Blick	ad(r)	»	# vl	# ad(r)	»	»	» #	vm('Wäsche')	
Augen/Brauen									
Mund									
Backe									
Nase									
Ausdruck									
Rolle									
nichtdom. Hd.									
beide-Hde.	SCHNELL-MACHEN				BALKON		WASCHEN		HÄNGEN+ (v)
dom. Hd.	ICH		SbwB (vl)		IX (v>sl)		IX (sl)		
Mundbild	ich	schne	ll		Ba	lkon	wa	schen	
Übersetzung	(5) Dann ging ich schnell		auf den Balkon				um die Wäsche aufzuhängen.		

Figure 6. Portion of an Excel transcription of a Swiss German Sign Language narrative

5.3. Tiered Transcriptions with tagged media software (ELAN)

The development of technology for ‘tagging’ video media in recent years has meant that transcriptions can be directly linked to the raw data in the video. Software such as the free application ELAN, developed for other kinds of research and for all computer platforms by the Max Planck Institute in Nijmegen is becoming widely used in recent years by signed language researchers (<http://www.lat-mpi.eu/tools/elan/>). Figure 7 is an example of some of the possibilities of an ELAN transcription. The researcher can create, add, view, and delete tiers according to the needs of the study. For signed language researchers, the constant availability of the original signing has helped offset the disadvantage of the complete form of the signing not being reflected in the glosses or notations systems used. When in doubt, one can always look at the ever-present video that flows along with the transcription.

5.4. Tiered Transcriptions with tagged media linked to a lexicon (iLex)

While having the raw data always available is helpful, it does not really solve the problem of an inconsistent attribution of glosses to signs. One attempt to overcome this problem is the iLex software developed over fifteen years of work on dictionaries for technical terms in German Sign Language (Deutsche Gebärdensprache, DGS) at the University of Hamburg (Konrad 2011). The iLex technology is similar to that of ELAN, but has the additional advantage of linking the glosses in a media-tagged transcript to

the glosses for sign lemma in a central lexicon. This linking has several advantages:

- The transcriber can easily check if the intended gloss for a sign in the text is the correct one by looking at the citation form in the lexicon, as well as descriptions of its meaning and other dictionary information about the form, variations and uses of the sign;
- Transcribers can in addition view how the sign is used in the context of other annotated video data linked to the lexicon;
- Lexicon users have, correspondingly, access not only to the usual dictionary information about the sign but also to the sign in context of all the linked videos.

The screenshot shows the ELAN software interface. At the top, there is a menu bar (File, Edit, Search, View, Options, Help) and a toolbar. Below the menu is a video player showing a person signing. To the right of the video player is a table with columns for 'English translation', 'Annotation', 'Begin Time', 'End Time', and 'Duration'. The table lists 12 numbered English translations with their corresponding timecodes and durations.

Below the video player and table is a detailed glossing table for three segments of the video. The table has columns for 'English translation', 'Greek translation', 'Glosses English', 'Glosses Greek', 'sentence type', 'Grammatical info', 'topic', 'eyebrows', and 'mouth gesture'. The segments are: 'who is playing?', 'where are they playing?', and 'what are they playing?'. The glosses include 'play-board' and 'who / NAME' for the first segment, 'PLAY-BOARD' and 'WHERE / PLACE' for the second, and 'PLAY-BO' and 'WHAT / THING' for the third. The Greek glosses are 'ΠΑΙΖΩ-ΕΡΙΤΡ' and 'ΠΟΙΟΣ / ΟΝΟΜΑ' for the first, 'ΠΑΙΖΩ-ΕΡΙΤΡ' and 'ΠΟΥ / ΤΟΠΟΣ' for the second, and 'ΠΑΙΖΩ-ΕΡΙ ΤΙ / ΠΡΑΓΜΑ' for the third. The sentence types are 'q' for all three. The grammatical info is 'v' for all three. The topic is 'raised' for the first, 'surrowed / squint' for the second, and 'surrowed' for the third. The mouth gesture is 'a / who' for the first, 'a / where' for the second, and 'a / what' for the third.

Figure 7. An example of a transcript from a Greek Sign Language corpus in the media-tagging program ELAN (Efthimiou et al 2009)

Figure 8 shows an example of an iLex transcription of German Sign Language linked to a lexicon.

Both the ELAN and iLex technologies have been developed for academic (i.e. not commercial) purposes and are available to researchers of other signed languages. The maintenance and continued development of both are also assured by the fact that large institutions stand behind the software.

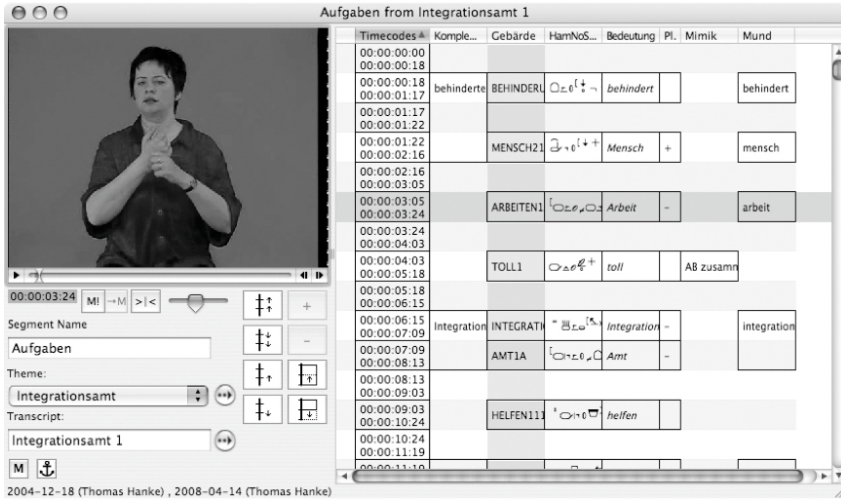


Figure 8. Example of an iLex transcription of German Sign Language (Hanke and Storz 2008)

6. Signed Language Corpora

6.1. Recent research on signed language corpora

All of these newer methodologies have made it finally possible to carry out corpora projects for signed languages. Years of research on oral language corpora have established their value for many different kinds of linguistic research, ranging from lexicography, to discourse analysis and acquisition studies. For endangered languages – a category to which signed languages belong (Johnston 2004: 358) – the documenting which corpora provide can be vital.

Konrad (2010) provides an overview of recent signed language corpus projects for 14 different signed languages. A European Cultural Heritage Online (ECHO) pilot project has produced an online corpus of Dutch, British and Swedish sign languages (<http://www.let.ru.nl/sign-lang/echo/>). Several Sign Corpora Network (<http://www.ru.nl/slcn/>) workshops have addressed, among other issues, metadata, ISO codes for signed languages, conventions for annotation, as well as exploitation and publication of signed corpora. Workshops at four recent Language Resources and Evaluation (LREC) conferences have increased international cooperation in this, for sign language, new field (Streiter and Vettori 2004; Vettori 2006; Crasborn et al. 2008; Drew et al. 2010).

One of the largest signed language corpora to date is a long term (2009-2024) project for documenting the ‘everyday’ lexicon of German Sign Language. The project involves videotaping a large corpus of data for a variety of different kinds of signing by signers throughout the country. The videotaped signed texts are then tagged and annotated in iLex, which is coordinated with, and at the same time expands, a central lexicon of the language (Prillwitz et al. 2008).

6.2. Privacy problem of signed language corpora on the Internet

Many oral language corpora are now available to the researcher, and some to the general public, on the Internet. For signed corpora, this web-presentation involves a privacy problem not faced by written corpora of oral languages. Whereas the identity of the original speaker of written corpora remains hidden, the identity of the person producing videotaped signed texts is readily accessible on the computer screen of the user, sometimes for many years into the future. For studio-produced videos, for which the signing models have given permission for the Web-publication of their faces, this isn’t a problem. Researchers, however, often need to base their analyses on spontaneous signing of adults or children, not all of who are (or are not yet) aware of the consequences of a web-based publication of their signing. Who ‘owns’ this video data? What are the conditions for explaining, collecting permissions of use?

One workaround for this privacy issue is the use of signing avatars for web representations. There has been much recent work on signing avatars in several countries. Many of these projects are reported upon at the international conferences on research methodologies in sign language linguistics (TISLR 2010). A European Commission CORDIS project, Visicast, has developed an Avatar that signs information in British Sign Language at post offices (<http://www.visicast.co.uk/>). The project ‘Trainslate’ will translate German train announcements into avatar signed Swiss German Sign Language equivalents for Smartphones (<http://www.cl.uzh.ch/research/maschinelleuebersetzung/signlang.html>). The European Union project, DictaSign, aims to develop a prototype for a signing Wikipedia (www.Dictasign.eu) involving avatar technologies. The signer should be able to upload a contribution in the form of videotaped signed text. Visual recognition and visual language synthesis technologies would then reproduce the human signing in the original video with the signing of an avatar for publication of the text on the Web. The avatar should show all

the relevant semantic and grammatical features of the original signing, including the relevant linguistic non-manuals, but give no indication of the original human signer's identity. If this avatar technology becomes sufficiently developed, it could also theoretically be used to represent signing in signed corpora posted on the Internet (as well as on mobile phones and other hand-held devices).

7. The issue of iconicity

7.1. Arbitrariness vs. iconicity

The iconicity of signed languages has been a problem that has confronted linguists for decades. Theoretically, the question is should iconic elements be represented at all, and if so, as a mere modality effect or as an essential aspect of the language? Most researchers in the 1960s and 1970s felt that in order to qualify as a 'true language', signed languages had to conform to Saussure's dictum of the linguistic sign's 'arbitrariness', a term which by that time had come to mean the 'un-motivatedness' of the sign (Müller and Fischer 2003). Consequently, there has been a longstanding discussion about iconicity, which has included dissecting its meaning, determining whether, in isolated signs, the iconicity is 'transparent' or 'opaque', looking at the cultural relativity of iconic terms, and at the influence of iconicity on the rate and type of acquisition of signs by children and the learning of signs by adults. Many of the early descriptions of signed languages tended to focus on the obviously arbitrary elements of these languages. However, even as a growing number of research studies made it increasingly clear that signed languages are complex linguistic codes that have to be learned in order to be understood, the prevalence of iconicity, or 'visual representations', at all levels of the language stubbornly made it impossible to banish the topic from the focus of research.

Some early studies treated iconicity at the lexical level as a form of visual metaphor or metonym (Boyes Braem 1981, 1984, 1986). This metaphor/metonym approach was greatly accelerated by the growth in the 1980s and 90s of cognitive linguistics, especially by the work of linguists such as Lakoff and Johnston 1980, and Fauconnier and Sweetser 1996, upon whose theories newer metaphoric/metonymic approaches were made by signed language linguists such as Brennan (1990a), Cameracanna et al. (1994), Taub (2001), and Wilcox (1993, 2007). Figure 9 shows an example from

British Sign Language of the visual metaphor of ‘grasping a thought’ in the sign for the abstract concept ‘understand’.



Figure 9. British Sign Language sign for ‘understand’ based on the visual metaphor combining (1) THINK and (2) GRASP (Brennan 1990b: 225)

7.2. Iconicity and the productive lexicon

The role of iconicity is especially difficult to ignore in signs belonging to what has been termed here the productive lexicon. These kinds of signs have been referred to in the literature over the years under various names, including ‘depicting signs’, ‘classifier signs or constructions’, ‘highly or strongly polymorphemic structures’, and ‘highly iconic structures’ (see, for example, the discussion highly iconic structures in Cuxac and Sallandre 2007). As mentioned in Section 3, agreement verbs can be modified to show grammatical persons. Another group of signs can be modified to reflect source, goal and manner of movement. Productive signs can further be modified to show the class of the referent object, or its size, shape and weight or how it can be manipulated by the human hand or other instruments. One description of these productive forms treats them as the result of a set of ‘*Bilderzeugungstechniken*’/image generation techniques (Langer 2005). There are a very large number of possible productive forms. The use of specific productive forms in specific contexts is not obligatory, unlike most oral language classifiers, but depends on what the individual signer chooses to highlight in a particular context. (See the discussion of ‘classifiers’ in signed and spoken languages in Engberg-Pedersen 1993; Emmorey 2003.)

Entire sentences can be produced by combining a productive form in one hand with another in the other hand. For example, for the meaning ‘the

cat is on the table' in Figure 10, in the last sign, the dominant hand handshape indicates 'a small animal' and the hand location shows 'is located on'. The handshape in the non-dominant hand indicates 'a flat horizontal surface' and the spatial arrangement of the hands conveys the relative locations of the objects. The handshapes in these productive signs of movement and location act like proforms and are usually identified (before or after) with their specific referent (for the example here, conventional signs for 'cat' and for 'table'). This sentence also illustrates the convention for mentioning the larger object first.

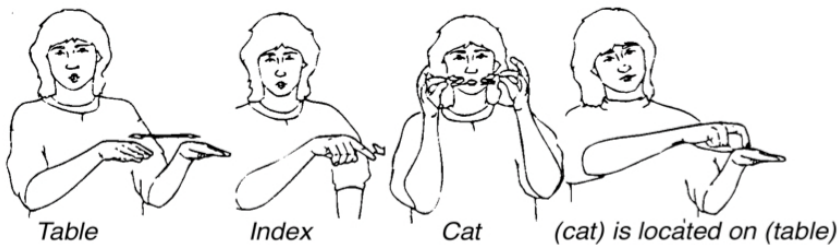


Figure 10. Productive signs used to sign 'the cat is on the table' in Swiss German Sign Language (Boyes Braem 1995: 151)

Especially relevant for methodology is the fact that not only is there a myriad of possible productive forms but that, in addition, they have no single 'citation' form. One cannot, for example, make the productive locative verb meaning 'to be located' in Figure 10 without producing some kind of handshape, which automatically specifies a class of referent.

For lexicographers, the large number of productive signs having no citation form combined with their manifestations in tokens which often involve gradient features, make them very difficult to represent in signed language dictionaries. As a result, almost all sign language lexica produced to date consist of the 'conventionalized' (or 'frozen') lexicalized items that have citation forms, which can be described by non-gradient, componential features and make little or no mention of productive forms.

Unlike lexicographers, researchers working with signed texts or corpora cannot just leave out these productive forms, as they are omnipresent in actual signing. The exact proportion of productive to conventional signs in a text depends to some extent on the type of discourse. Research on French Sign Language has found that up to 70% of signs in some narrative styles were productive signs (Sallandre 2003, cited in Pizzuto et al. 2006). Konrad (2011) found in four dictionaries for technical terms in German Sign Language, that productive forms represented 25% of the total tokens.

How these productive forms are represented in transcripts of signed text has depended on the individual researcher and the aims of the transcription. Figure 11 shows how productive forms were represented in advanced level learning material for Swiss German Sign Language (DSGS). Here, productive verbs of movement or location are represented with an abbreviation: Sbw (*sich bewegen*) for verbs of locomotion and Sbf (*sich befinden*) for verbs of location. Additional comments are appended in parentheses to give some indication of the complete meaning of these complex signs. The last sentence of story transcribed here is typical of spontaneous narratives with an abundance of productive signs, here shown in bold type.

Sbw(Doppeldecker) Rolle: Roter Baron [ZIELEN **FB(Kreise)**
FB(Kühlerfigur) ZIELEN **Sbw(Propeller)** ZIELEN **HH(steuern)**
Sbw(Geschosse beidseitig abfeuern) Rolle: Pilot [«hört Geschosse»
Sbw(Geschosse auf Flügel) | FB(Flugzeugkörper) Sbw(Objekt in den
Flugzeugkörper) Sbw(Objekt fliegt von Flugzeug weg) Sbw(Geschosse
beidseitig abfeuern) Rolle: **Sbw (Flugzeug kippt) Sbw(Flugzeug Roter**
Baron) Sbw(Doppeldecker) Rolle: Roter Baron [schaut nach unten
 FLUGZEUG_2 RAUCH] **Sbw(Flugzeug stürzt zu Boden) Sbw(viel Rauch) ||**

Figure 11. The last sentence of a gloss transcription of a Swiss German Sign Language narrative about The Red Baron in which productive forms are marked here in bold type. The productive forms are verbs of movement (Sbw, *sich bewegen*), of location (Sbf, *sich befinden*) and form descriptions (FB, Form Beschreibung) with additional descriptions in parentheses (Boyes Braem 2005b)

7.3. Representing iconicity in a separate gloss ('double glossing')

Researchers at the University of Hamburg have attempted to address the issue of iconicity at the lexical and text levels by the use of a system of 'double glossing' (Konrad 2011). This methodology evolved from earlier theories of iconicity used by Cuxac to describe French Sign Language (Langue des Signes Français, LIS; see, for example, Cuxac and Sallandre 2007). In addition to the traditional gloss reflecting the sign's meaning (as described in Section 4.1), each sign is given a more basic gloss that reflects the sign's underlying iconic image. An example of an iconic gloss in the German data is FLACH1A for the image of something horizontal and flat. It is made with the hand held palm down, fingers outstretched but not spread. FLACH1A is associated with the meaning and forms of 16 conventional signs in the current DGS lexica for technical terms (Basis, Boden,

Bühne, Erdgeschoss, Feld, Fläche, Fußboden, Grund, Grundlage, Land, Platte, Platz, Prinzip, Pult, Teppich, Tisch) (Konrad 2011: 139).

An important part of the methodology of double glossing is that iconicity is treated as a central feature not only of productive vocabulary but also of most conventional signs. According to Konrad (2011), the inclusion of iconicity in the identification of lexical units shows the structuring function of iconicity at the lexical level, and thus is something, which should be clear also in the lexical description of all forms of the vocabulary (Konrad 2011).

The recognition of underlying iconic forms in the conventionalized vocabulary also provides a way of addressing something often seen in signed language corpora, the ‘re-iconization’ of conventionalized signs. Brennan (1990b), who was one of the first to use the term ‘re-iconization’, writes in her analyses of British Sign Language (BSL) that clearly the relationship between sign form and meaning in many examples is often motivated, and hence not purely arbitrary. She goes on to suggest “this motivated relationship has a ‘triggering’ effect in the production of new signs” (Brennan 1990b: 217). Similar findings were made in other studies, including an analysis of new signs created for technical terminology in Swiss German Sign Language (Boyes Braem et al. 2012). The inherent, ‘sleeping’, iconicity of signs is also an aspect of the creation of signed language poetry (Sutton-Spence 2005).

In sum, this form of double glossing offers researchers working on signed language texts a unified way of representing both conventionalized (and potentially re-iconizable) as well as more obviously iconic productive forms in their signed corpora. The representation of the underlying iconic form also means that relationships between lexical items can be identified not only according to semantic families (as in written language glosses), or according to formal elements (as in HamNoSys and SignWriting notations), but also according to networks of shared underlying iconic forms. This represents a step away from the previously used lexical models, that had been heavily influenced by descriptions of oral languages, and is a step towards linguistic analyses that are potentially more insightful about this visually-based language. Konrad writes that the underlying iconic gloss reflects what Deaf signers have long observed informally:

The analysis of the basic underlying picture is the making-explicit of a knowledge that Deaf unconsciously are constantly reactivating when they use conventional signs as contextualizing methods for mouthings, to modify signs and to re-iconize or produce new productive signs. (Konrad 2011: 214, translated from German by the author)

8. Concluding thoughts

Each of the methods described here for written representations of signs has its own advantages and disadvantages, which are summarized in Table 1 below.

Table 1. Overview of possibilities of written representation of isolated signs and signs in sentences/discourse (HNS: Hamburg Notation System; SW: Sign Writing, Iconic gloss: Hamburg's double glossing system; BTS: Berkeley Transcription System; Elan: Media Tagging program; iLex: Media Tagging program+lexicon)

		HNS	SW	Gloss	'iconic' Gloss	BTS	Elan	iLex
Isolated sign	represented with symbols	√	√					
	represented with written oral language (ol)			√	√	√		
	reproducible from written form alone	√	√					
	represents iconic elements in conventional and productive forms		√		√			
Signs in sentences/text	Multi-dimensional spatial and non-manual components represented with		√ symbols as images	√ ol words	√ ol words	√ ol words	√ ol words or notation symbols in separate tiers	√ ol words or notation symbols in separate tiers
	easily readable		√	√	√	√	√	√
	reproducible from written representation alone		√					
	machine writable and searchable	√		√	√	√	√	√

At the present time, a truly adequate written representation of signed language, especially signed language texts in corpora, would involve a combination of different methodologies, for example:

- SignWriting notation of the sign token, as its symbols offer the most complete representation of signs in context, and is readable and reproducible from the symbols alone;
- HamNoSys notation in order to be able to machine search at least the basic manual, if not yet all the non-manual components of the signs;
- Machine searchable and easily readable ID-glosses to represent the sign lemma, linked to a central lexicon and video-archive, providing glossing consistency and further information about the form, meaning and variations of the sign;
- An additional gloss of the sign's underlying iconic form;
- Additional tiers for non-manual components of the face, mouth, upper body and eye gaze needed especially to annotate specific morpho-syntactic syntactic, discourse and prosodic features.

Other linguistic annotations could be added in additional tiers, depending on the specific aims of the research. For example, Berkeley morpheme notation (BTS), annotations for word class, constructed speech or action, turn-taking. A tier with translation of entire sequences into the written form of an oral language would make searches for content topics much easier. Whenever possible, the annotations should conform to the agreements for shared standards for annotations that were the outcome of the Sign Language Corpus Network's third workshop (http://www.ru.nl/slcn/workshops/3_annotation/). Future international collaboration in the development and (equally important) actual use of such conventions might also lead to a future IPS-kind of phonetic notation for all sign languages, perhaps based on the HamNoSys system. (Another first attempt at developing an IPA system is the Sign Language International Phonetic Alphabet, SLIPA by Peterson, available online at <http://dedalvs.com/slipa.html>.)

A final thought: Signed languages are, of course, not the only kind of data, which have proven difficult to represent in written forms. In the field of electro-acoustic music, for example, there are no scores. Bennett (1997) points out the consequences:

Not only is it next to impossible to speak seriously about the craft of composition without a literature which can be analyzed, it is equally difficult to do any kind of serious aesthetic education. Without models one can examine soberly, away from the bright lights of performance... it is difficult to isolate, let alone to formulate arguments for and against, particular aesthetic decisions. (Bennett 1997: 11, translation from French by Bennett)

Bennett goes on to note that, although this lack of written form has the pedagogical effect of making it difficult to pass on to students knowledge about electro-acoustic music, it doesn't, of course, stop the composer from 'writing' computer music. In contrast, the analogous problem of written forms for signed languages, especially for signed texts, presents a serious obstacle for linguists. Not only, as Crystal (1987: 381) has also pointed out, that the teaching and training of future generations of researchers is dependent upon written forms of the data, but also, to paraphrase Bennett, linguists need to 'isolate and analyze elements, formulate arguments for and against theoretical descriptions, theories and models of the language'. However, the combination of existing writing systems with evolving technologies and theories offers the linguist today more hope than ever for adequate and useable written representations of signed languages.

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Part V: Language, space and society

Crossing perspectives on onomastic methodology: Reflections on fieldwork in place name research. An essay in interactional onomastics

Elwys De Stefani

1. Introduction*

Onomastics developed as an academic discipline in the course of the 19th century, although research on proper names can look back on a much longer tradition (see De Stefani and Pepin 2010 for a synopsis). In the second half of the century place names aroused a particularly fervent interest among both philologists and geographers. The preoccupations of the former were mainly etymological and dialectological, as testified by the works of e.g. Flechia (1871, 1874) and Ascoli (1879).¹ The latter hoped that the etymological explanations would allow them to describe the ‘original’ topography of a location. The geographer William Hughes (1867) proposed etymological interpretations of place names, stating however that geography should go beyond the mere analysis of names. Others, like the Swiss geographer Johann Jacob Egli focused much more heavily on place names. In his *Nomina geographica*, Egli (1872) offers a thorough illustration of his method of analysis and classification across 270 pages.² Fourteen years later he would be the author of the first ‘History of geographical onomastics’ (*Geschichte der geographischen Namenkunde*, 1886), offering a detailed overview of place name research from Antiquity to his own time.³ Place names have also been central to other disciplines, such as anthropology, as Franz Boas’ memorable (1934) study of the *Geographical names of the Kwakiutl Indians* testifies.

The historical exploration of place names – and of names in general – is firmly rooted in investigations of human culture and continues to be the central preoccupation of onomasticians. It seems however that onomastics has been losing the prestige that the discipline enjoyed only a few decades ago. This might be related to a general trend observable in linguistics, that tends to accord lesser significance to etymological approaches, but it might also be the consequence of a lack of theoretical and methodological renewal that some linguists criticize. Levinson (2003: 69) observes for instance

that “[t]he study of placenames or onomastics is one of the older branches of linguistic enquiry [...]. But despite the long tradition of study, little of theoretical interest has emerged”.

In this paper I intend to respond to Levinson’s criticism by proposing an alternative approach to the study of (place) names. While the historical perspective has prevailed for decades in onomastics, I propose to adopt a synchronic view, by studying place names as they are used in naturally occurring conversations. My approach is interactional in its foundation and draws on the investigative methods developed in conversation analysis and interactional linguistics. I will show in the following sections that this method allows not only for a contextualized analysis of actual (place) name usage, but also for a reconsideration of the category “place name” and hence for a re-examination of traditional onomastic concepts.

Before going into the analysis of the data, I shall reflect on the practices of data collection in historical onomastics and show how these shape subsequent analytic possibilities.

2. Data collection in onomastics

As a philological discipline, the onomastic approach is deeply rooted in a humanistic tradition preoccupied with conserving cultural heritage and characterized by an incontrovertible demand for exactitude and completeness.⁴ The latter aspects are particularly visible in the diversity of data on which historical onomasticians build their analyses. These encompass written documents, both ancient (notary records, tax lists, travel journals, etc.) and recent, records of onomastic interviews, as well as phonetic transcriptions of single place names. Given this heterogeneous set of data, onomasticians have to deal with an array of corpus-related problems: for instance, in ancient documents place names may be written in Latin, in “standard” or in vernacular languages (especially in areas of language contact; see Werlen 2008, 2010), they may be handwritten or printed and, of course, they may present orthographical variations.

The data stemming from spoken language is generally collected in an experimental setting. The researcher usually conducts interviews with informants either on the basis of cartographic material and/or name lists or while exploring on foot the location for which place names are to be collected. Although interviewing is a thoroughly interactional activity, it is common practice in onomastic fieldwork to isolate the place names from

the conversational environment of their emergence. This is particularly evident in the still widespread practice consisting of direct on-the-spot phonetic transcription of the place name as uttered by the informant (without previous audio recording). Indeed, audio recordings are generally seen as unnecessary. In her paper on field methods in microtoponomastics Waser (2004: 355) affirms for instance that “[t]he use of tape recorders can be helpful at the beginning for subsequent verifications. In my experience, with increasing practice the device does not provide any big advantage, unless conversations are to be stored as sound documents”.⁵

Usually, data collected in this way are taken as a set of notes containing one or more phonetic transcriptions of the “same” name. This is best illustrated with an example of a hand-written note, extracted from the rich corpus preserved at the Research Center for Name Studies (*Forschungsstelle für Namenkunde*) of the University of Berne. The data below (Figure 1) was collected in 1962 by an investigator identified as “T.F.”, interviewing the informant “Br.”:

KANTON BERN Gemeinde: Innerkirchen

Definitiver Lokalname: Hinderflieli

Bisherige Schreibung: Hinderflieli oder Hinderflieli (G) Nr. 202

Mundartliche Aussprache: Br.
(Ertl. Frage: Wo?, bei Zusammensetzungen stets)

ds hīndər flīəli im hīndərflīəli oder
 (i) auch: hīndərəmflīəli
 wotrin? hīndərs flīəli

Was bezeichnet der Name?: (Objekt, besondere Gegendeschaffenheit)
Häuser mit Unland

Bemerkungen: (Wie erklärt sich der Gewährsmann den Namen?
Urkundliche Formen?)
Siehe Nr. 202 (Flüeli)

Gemeindebesprechung:

Jahr: 1962 Explorer: T.F.

Figure 1. Compiled data form used for place name collection in onomastic research (Forschungsstelle für Namenkunde, Institut für Germanistik, University of Berne).

This document accounts for the complexity of the data constituted by the toponomasticians' fieldwork, e.g. the 'previous writing' (*Bisherige Schreibung*) is rendered with two graphic representations, the phonetic transcription varies – also with respect to a hypothetical contextualized use of the toponym. Informants were indeed asked (and still are, according to Waser 2004: 358) how the specific name was pronounced as a response to the question *wohin?*, i.e. 'where' (are you going)?

This multiplication of data, which I have only been able to outline here, is often regarded with ambivalence by onomasticians. On the one hand, the rich investigative sources allow for a detailed description of formal variants and diachronic developments and possibly facilitate the etymologist's task. On the other hand they appear problematic when it comes to what is generally seen as the final product of onomastic investigation, called the *Namenbuch* 'name book' in the German tradition. Such name books are organized very much like dictionaries (see Schneider and Blatter 2011 for a recent example), i.e. as a list of lemmatized place names. Hence, the persons who compile onomastic dictionaries have to agree on the formal characteristics of the names that will be retained as lemmata. This inevitably introduces a dimension of "officiality", as those name forms that are recorded as dictionary entries are likely to be treated as the official ones.⁶ While onomastic dictionaries are indeed mostly organized with respect to the written name form, they usually also document the (local, regional, standard etc.) pronunciation(s) of the place names – again, the issue of selecting the "right" pronunciation for the specific purposes of the publication might be problematic. Moreover, compilers usually do not reproduce the phonetic transcription as it figures in the primary transcriptions, but a simplified version – introducing yet another transformation of the data. The reason for this is of course practical, as the authors are generally concerned about the legibility of the phonetic transcripts for the intended readership.

3. Studying place name usage in social interaction

Work on (place) names in social interaction has been carried out in different linguistic subdisciplines, at least since the 1970s. Based on Austin's (1962) speech act theory and developments of it, Dobnig-Jülch (1977) came up with a pragmatic analysis of pet names, while Werner (1986, 1995) defined the field that he called *Pragmatik der Eigennamen* 'pragmatics of proper names'. In these approaches, the techniques of data collection

are rarely discussed – often, indeed, the data stem from introspection and have no empirical basis.

For a fundamentally empiricist approach that analyzes essentially “naturally occurring” data – i.e. not collected through experimental setups such as interviews etc. – we have to turn to conversation analysis and its extension as interactional linguistics. Being rooted in sociology – and in one of its most incisive developments, namely ethnomethodology (Garfinkel 1967) – conversation analysts are not primarily interested in language, but in the participants’ actions. Interaction is understood to be “the primordial site for sociality” (Schegloff 1987: 208) and talk is just one resource that can be employed to study the constitution of sociality. This praxeological view on language is patent, for instance, in Schegloff’s (1972) seminal paper on what he calls *place formulations*. Contrary to the way linguists would proceed, Schegloff does not analyze particular language units – say, place names – that speakers use to refer to geographic entities. Rather, his object of research is instead a *practice*, as he examines the linguistic resources that speakers employ when referring to a location. In his (1972) data, Schegloff observes five kinds of place formulations, i.e. ways in which speakers refer to places in interaction. These are: a) geographical formulations (addresses, degrees of latitude and longitude), b) relation-to-members formulations (*Chuck’s house*), c) relation-to-landmarks formulations (*nearby the bridge*), d) course-of-action places (*where they put the rubbish*) and e) place names.⁷ Hence, from this point of view, place names are but one possibility among a set of others for what Mondada (2009: 1994) calls *spatial description*.⁸

But how do interactants choose among the different resources that are at their disposal for referring to space? How do they opt for the appropriate formulation? According to Schegloff, speakers analyze the interactions at hand with regard to three dimensions, that he captures under the headings a) *location analysis* (where are the speakers located with respect to each other and in relation to the place that is being described?), b) *membership analysis* (how are the speakers reciprocally categorized?) and c) *topic or activity analysis* (which topic is being discussed and/or what is the activity the participants are engaged in?).

As for the specific kinds of place formulations, Schegloff notes that place names are used unproblematically when the speaker can reasonably assume that the interlocutor knows the place bearing that name. It may be added that, reflexively, this is precisely the assumption that the speaker exhibits by employing a place name. Preferentially, however, speakers use relation-to-members formulation to refer to a place, as Schegloff notes. The conclusion of his paper is thus that interactants choose place formulations

that are *right* (or appropriate) for all practical purposes, without necessarily being *correct* (or precise) from a strictly referential point of view.

Apart from Schegloff's seminal paper, practices of place reference have scarcely been examined from a conversation analytic perspective (but see Mondada 2000; Myers 2006; Heritage 2007). Even less attention has been ascribed to the use of place names in interaction and to the analysis of the social actions that participants accomplish when using place names. However, under the label *interactional onomastics* I recently proposed an approach to the study of names that is grounded in conversation analytic methods and that aims at investigating names as resources for social action (De Stefani 2009a).

The specific "analytic mentality" (Schenkein 1978) attributed to conversation analysis can be discerned at the very early stages of investigation (i.e. during fieldwork and data collection) as well as in the subsequent analytical steps. The corpus generally consists of audio and/or video recordings of unelicited interaction. The interaction is naturally occurring, in that it is assumed that it would have taken place also in the absence of the researcher.⁹ Hence, the data may consist of diverse settings of interaction that are recurrently observable in a community – such as service encounters (3.1.), guided tours (3.2.) or even focus group discussions (3.3.). Unlike sociolinguistic or "traditional" onomastic interviews, the latter are not used as a technique for eliciting data (consisting of, for instance, isolated onymic items), but as a specific kind of interaction that is observable in our culture.

The analysis proper of interactional data aims at a contextualized description of the linguistic resources. Place names – as well as all the other language units – are embedded in turns-at-talk of a priori undetermined length and in the sequential development of the interaction. What precedes the occurrence of a place name (within the turn, but also within the sequence) and what follows it are crucial for the analysis. This is in line with the ethnomethodological reasoning according to which "[...] the activities whereby members produce and manage settings of organized everyday affairs are identical with members' procedures for making those settings 'account-able'" (Garfinkel 1967: 1). The observable methods are accountable for the participants but also for the analyst: his or her aim is thus to describe the interactants' methods and the resources they employ from an *emic* perspective, i.e. from the participants' point of view. In other words, the analyst avoids applying to the data *etic* analytical categories that display his or her view on the interactional undertakings but not necessarily that of the participants.¹⁰ The necessity of an emic description might be considered problematic with regard to the specific object that is the present focus of my analysis. Indeed, when talking about *names* and *place names* I employ

analytical categories that have been thoroughly discussed by language philosophers (e.g. Mill 1843; Frege 1892; Russell 1905; Kripke 1972) and by some linguists, but that are not necessarily relevant categories for the speakers in their everyday interactions. The challenge of the researcher in interactional onomastics is thus to come to terms with this circumstance. The analyses below suggest a possible way forward.

3.1. Place names in their conversational environment

Just like any other language unit used in interaction, (place) names are embedded in a complex environment: they occur as units of a turn-at-talk, they are anchored in the sequential organization of the interaction, and they are fitted to the praxeological environment at hand. Therefore, if a contextualized analysis of place names is sought, these different analytic layers should be considered. An illustration of how these different dimensions are intertwined is provided with the analysis of the first excerpt. It is the beginning of a service encounter taking place in a Neapolitan travel agency. Two ladies have just entered the agency. At the opening of this encounter only one of the customers (Rosa) speaks to the travel agent (Anna):

(1) 9212av1A11 (42:23–42:40)

- 1 ANNA buon[↑]giorno
hello
- 2 (3.5)
- 3 ANNA prego
please
- 4 (0.6)
- 5 ROSA >(sio-) volevamo vedere< se c'è disponibilità\ perè il
(sio-) we wanted to see if there is availability for the
- 6 villaggio della <swanə toure> ^ə a marsa^alamə=
resort of Swan Tour er in Marsa Alam
- 7 ANNA =s[ì
yes
- 8 ROSA [əka::- kahrama:°:[:°] a ^eh/
(Kahramana) (in) right
- 9 ANNA [sì]
- 10 ROSA 'h ə per il ventotto di febbra[io\ ade]sso\
er for the twenty-eighth of february now
- 11 ANNA [↑sì]
yes
- 12 ANNA =comodatevi\
have a seat

Starting from an onomastician's perspective, we may be interested in the specific pronunciations of the names occurring in this excerpt. Although our transcription conventions do not allow an accurate rendering of their phonetic properties, it is sufficiently precise to observe that names such as

Swan Tour or *Marsa Alam* are pronounced by Rosa with a final schwa (line 6). This may of course be explained with regard to Rosa's native linguistic background, Italian (and very likely also Neapolitan). However, this does not allow us to conclude that Rosa's pronunciation reflects the way in which Italian speakers generally produce names ending in a consonant. Rather, this observation makes us aware that different ways of pronouncing a name are naturally observable and that these differences may be linked to idiosyncratic traits, but also, more importantly, to the action that the participant achieves by shaping a name's phonetics in specific ways. This is visible at line 8, where Rosa formulates the name of the resort as *əka:-kahrama:°:°*. The name is presented as problematic: Rosa provides a first formulation (*əkah:-*, line 8) that starts with a schwa and ends in a considerable lengthening of the last vowel, and she then does a self-repair (Schegloff, Jefferson, and Sacks 1977) by interrupting the first formulation and producing a new version of the name (*kahrama:°:°*, line 8), which is again constructed with an important stretch of the last syllable and with a low-voiced ending. Note that the name is not completed. However, Rosa goes on lengthening the last syllable of the name until she gets a sign of reciprocity: it is only when Anna produces an overlapping *sì* ('yes', line 9) that Rosa stops the formulation of the name.

While it might be argued that Rosa simply displays pronunciation difficulties or incomplete recalling of the name, I would strongly advocate an analysis that examines the task that Rosa accomplishes by producing the name in this specific way. The travel agent's *sì* ('yes', line 9) occurring in overlap with the very end of Rosa's name formulation shows the travel agent's understanding of Rosa's talk: Anna treats the particular format in which the name is produced as an invitation for displaying reciprocity. Note that Anna formulates only a *sì* – that Rosa treats as a continuer (Schegloff 1982) – while she could have produced the complete name of the resort (*Kahramana*). Hence, she displays reciprocity with regard to Rosa's talk and recognition of the resort's name. In other words, she treats Rosa's formulation of *kahrama:°:°* as an understandable name and not – as she could have done – as an incomplete and thus repairable name. Moreover, the fact that Anna avoids other-repair of (place) names in this interactional setting may reflect a preferred technique that is linked to membership categorization: it appears in fact that travel agents generally do not repair (or correct) idiosyncratic, incomplete pronunciations of place names. This can be seen as a way of displaying that the 'customer is always right' (further excerpts are given in De Stefani and Ticca 2011).

Let me end this analysis by a short note on the position that the names occurring in the excerpt above occupy in the turn-so-far and in the conver-

sation's sequential organization. As far as the latter dimension is concerned, the fact that the place name is used in the opening sequence of a service encounter is significant: as De Stefani and Ticca (in press) have shown, in this kind of interactions place names are recurrently used by the clients to introduce the 'reason for the visit' and as such establish the main topic of the subsequent talk. As regards the place names' positions within the turn that Rosa is proffering, note that they occur at so called transition relevance places (or TRPs; Sacks, Schegloff, and Jefferson 1974); i.e. at positions in the turn in which transition from current-speaker to next-speaker could occur. In the excerpt, Anna is visibly orienting to these positions, as she produces continuers precisely as the place names formulated by her interlocutor come to an end (lines 6–9).

Participants use place names to accomplish a great diversity of actions: they may serve for topic introduction, as in the excerpt just analyzed; they may also be resources that interactants mobilize when delivering a spatial description, as in the following piece of data.

3.2. Place names in spatial descriptions

Within conversation analysis, an early interest developed in spatial descriptions or *place formulations* in Schegloff's (1972) terminology (see Section 3). Place names are explicitly taken into consideration as possible resources for describing space, although, from an interactional perspective, they have been less widely analyzed than other ways of formulating place. Therefore, in this section I will focus on a collective activity in which spatial descriptions are expected to be frequent, namely touristic guided tours.

The following excerpt is taken from a guided tour taking place in Bellinzona, in the Italian-speaking part of Switzerland. The participants are standing on a hill next to a castle (called *Castelgrande*) and the guide (Vale) is giving historical information to the group of tourists.

(2) 9135vgA11 (15:16–15:53)

- 1 VALE ci(o)è questa coll[↑]ina esisteva già diecimila anni prima di
that is this hill existed already ten thousand years before
 2 cristo\ (0.2) la collina dove (0.4) c'è adesso
christ the hill where there is now
 3 castelgrande\ 'h quindi[↑]i primi abitanti °°eh::°° di
castelgrande so the first inhabitants er of
 4 bellinzo[↑]na (0.4) erano qui su questa (0.3) roccia[↑]e di
bellinzona were here on this rock and the
 5 primi son stati[↑]i roma:ni\ che passando hanno detto ma tō
first have been the romans who passing have said well hey
 6 che bel\ (0.9) abbiamo il libero passaggio nort e sudə\
how nice we have the free passage north and south

7 (0.2) perché a nord abbiamo il san bernardino da na parte
 because to the north we have the san bernardino on one side
 8 il lucomagno e il san gottardo d'all'altra: 'h e a
 the lucomagno and the san gottardo on the other and to the
 9 sud abbiám^o: (0.8) lago maggiore l'itali^a:^{eh} lugano
 south we have lago maggiore l'italia lugano
 10 chiasso e: l'italia di nuovo QUINDI 'h questo era
 chiasso and l'italia again so this was
 11 proprio^a l' centro/ (0.3) del passaggi- dei passaggi nort
 really in the center of the passage- the passages north
 12 (0.4) e (0.2) sud^e
 and south

In this excerpt the tour guide provides two occurrences of spatial description: the first (lines 1–4) focuses on the location in which the group is currently gathered, the second (lines 7–10) describes the centrality of that position with regard to the surrounding topographic features. I will only briefly comment on the different formulations observable at lines 1–4, and explain in greater detail lines 7–10, where several place names occur.

The description of the place in which the group is located is put in a historical perspective: the tourists are standing on a hill (*questa collina*, ‘this hill’, line 1) and the guide explains that it already existed ten thousand years BC. She goes on describing that place as *dove (0.4) c’è adesso castelgrande* (‘where now there is Castelgrande’, lines 2–3), which establishes the opposition ‘10.000 years BC’ vs. ‘now’. Interestingly, the different temporal layers that the guide evokes are merged in the subsequent formulations, as she states e.g. that ‘the first inhabitants of Bellinzona were on this rock’ (lines 4–5). Indeed, with *Bellinzona* she refers to the current administrative organization of the territory (which includes *Castelgrande*), but the place name is also used with regard to what she presents as the first inhabitants of the area, namely the Romans (line 5). This formulation could be described as a sheer anachronism if analyzed in a decontextualized way. If we consider the interactional environment of its occurrence, we see that it is in fact *recipient designed* (Sacks, Schegloff, and Jefferson 1974: 727), as it demonstrates the way in which the guide categorizes her interlocutors, namely as ‘tourists-visiting-Bellinzona’. Seen in this way, the guide’s explanation fits her practical purposes of the moment.

This brief analysis provides a glimpse of how (spatial) descriptions are fitted to the participants’ membership categorization (Schegloff’s 1972 *membership analysis*; see Section 3). The place formulations that the guide provides in lines 7–10 illustrate more clearly the reflexive relationship between social categorization and spatial descriptions. To fully understand the guide’s description, I provide a map (Figure 2) in which the toponyms that she uses are pinpointed.



Figure 2. Map of the Swiss Canton Ticino and neighboring northern Italy

In lines 7–10 the guide is illustrating her claim that the Roman settlers saw in Bellinzona a place that offered ‘free passage’ (*libero passaggio*, line 6) between the north and the south. She does so by describing an area that she delimits to the north with reference to three passes (*il san bernardino, lucomagno, il san gottardo*, lines 7–9), specifying that San Bernardino is on one side (*da na parte*, line 7) and the two other passes ‘on the other side’ (*d’all’altra:*, line 8). As for the southern boundaries of the area, they are also delimited in two steps, namely as *lago maggiore l’italià:* (‘Lake Maggiore Italy’, line 9) and as *lugano chiasso e: l’italia di nuOVO* (‘Lugano Chiasso and again Italy’, lines 9–10).

Describing a geographical area can be treated as a practical problem of the guide, inasmuch as she has to choose among different possible place formulations, and thus also among a variety of landmarks. At least two observations are due. First, we can see how the guide chooses the landmarks with respect to the current road system, as each of the places mentioned are located along one of the major roads that cross in the city of Bellinzona. The description is thus visibly oriented to the topic that the guide is talking about, i.e. depicting Bellinzona as located at the centre of routes

between the north and the south. Second, we observe that the guide chooses different kinds of landmarks for the northern and for the southern parts of the area described. The named passes selected for the northern part refer in fact to places that are located on the language boundary between the Italian-speaking part of Switzerland (where Bellinzona is located) and the German-speaking area. The southern delimitation of the area also establishes boundaries. As she says ‘Lake Maggiore Italy’ (line 9) and ‘Lugano Chiasso and again Italy’ (lines 9–10) she first names topographic entities that are located in Switzerland (part of Lake Maggiore, and the cities of Lugano and Chiasso) and then mentions Italy. In other words, she uses the country name ‘Italy’ for the area that lies beyond the Swiss border – while she could have used other toponyms, e.g. names of well known Italian cities (Como, Milan), of the region (Lombardy), or even the name of the city of Rome, with respect to the historical gist of her explanation. The place formulations that the guide uses in this section of her talk manifestly display the way in which she categorizes her interlocutors – not only as tourists visiting Bellinzona, but also as people who are living in the Italian-speaking part of Switzerland. From this point of view, choosing the appropriate spatial description also allows the guide to construct a collective social identity.

3.3. Beyond place names

In the last section of this paper I would like to turn towards names that present both toponymic and anthroponymic usages. In the following excerpt I will give some thought to names that may be described as ‘family by-names’, whereby onomasticians intend names that are assigned to persons who are tied to each other through kinship relations (Angelini 1997; Caprini 2001: 71). Such family names have been described as frequent in rural and alpine communities (De Stefani 2005; Favre 2005).

The excerpt below is taken from a focus group discussion that took place in the German-speaking part of Switzerland. The researcher (Sandro) is discussing family bynames with three Italian couples that have been living in Switzerland for many years. At least one member of each couple spent his or her adolescence in one of the two neighboring villages of Preone and Socchieve, situated in the pre-alpine region of Friuli (northeastern Italy). The conversation proceeds in Friulian and in Italian, and code-mixing is recurrent. The interaction was initially configured as an open, relaxed interview. However, the data so collected has not been used as a source from which to “extract” the names that the participants use during

their conversation (which is probably what would be expected from an orthodox onomastician's point of view). Rather, the names are analyzed as resources used in the specific interaction in which the participants are engaged.

(3) fam51231A (37:26–37:35)

- 1 PIER *chei di baraca a son: l:i di fonso quella- quelle 'h*
those di baraca are there di fonso those those
- 2 *case che sono la[ggi[ù vicino a v[o:i\]*
houses that are down there next to you
- 3 RUGG [da[vanti l:i da[vanti l^ga]ra[ge o'lì°\
in front there in front of the garage there
- 4 SAND [mhm [hm
- 5 PIER [chei l:i a son
those are
- 6 *chei di baraca\
those di baraca*
- 7 SAND mhm

From a strictly onomastic point of view, Pieras's (PIER) turn in line 1 already presents a problem. In fact, Piera is saying that the (persons) identified as *chei di baraca* are (meaning 'reside') in a place called *l:i di fonso*. It appears that the former of these two names is used to refer to people. This could, therefore, be categorized as an anthroponym. However, it is constructed with an *onymic unit* (De Stefani 2009b) for which it seems plausible to assume a toponymic reference (Friulian *baraca*, Italian *baracca*, 'shack'). In contrast, by saying *l:i di fonso* Piera refers to a place – and therefore the construction can be described as a toponym – but uses an onymic unit that has an anthroponymic basis (*fonso* being an abbreviated form of the personal name *Alfonso*). Although the change of onymic categories has been well documented from a historical perspective, the data provided here gives us a glimpse of how such alterations occur in the course of the conversation. As De Stefani and Pepin (2006) have shown, the participants interacting here (and generally speakers from the pre-alpine Friulian area) have specific linguistic resources that allow them to display whether an onymic unit is to be understood as an anthroponym, a toponym or in yet a different way. In fact, they recurrently use the format *chei di* ('those from') + onymic unit to refer to persons, while the format *l:i di* ('there at') + onymic unit is mobilized with reference to places. Combinations are thus possible – e.g. *chei di Fonso* meaning 'those (who live) at Fonso's', *chei l:i di Fonso*, etc. This illustrates that the static boundaries that onomasticians usually draw between anthroponymy and toponymy appear much more permeable in authentic conversational use.

This short piece of data allows me also to illustrate the occurrence of other kinds of spatial descriptions. After having mentioned the two names discussed above, Piera provides a place formulation. By saying *quelle 'h case che sono laggiù vicino a vo:i* ‘those houses that are down there next to you’ (lines 1–2) she actually produces what Schegloff (1972) called a *relation-to-members formulation*. In other words, she refers to co-present persons to describe where the area called *l:i di fonso* is located, namely next to where some other co-present participant used to live. This illustrates also Schegloff’s (1972) observation according to which relation-to-members formulations are used preferentially. Note that the following description, uttered by Ruggero (RUGG) is designed as a *relation-to-landmarks formulation* in Schegloff’s terminology: *davanti li davanti l^garage °li\°* ‘in front there in front of the garage there’ (line 3). In overlap with both of these descriptions Sandro (SAND) produces tokens of reciprocity (*mhm, hm*, line 5), after which Piera mentions again the family by-name *chei di baraca* (lines 5–6) and thereby closes the discussion about this name.

A final consideration may be put forward with respect to the specific interactional setting documented in this data. We may wonder, indeed, how the different place formulations produced are related to the interaction at hand and, how they make visible the participants’ relevant membership categories. Firstly, we note that Piera and Ruggero present their turns as being oriented to and designed for Sandro. In fact, the spatial descriptions analyzed above come to an end as soon as Sandro exhibits reciprocity.¹¹ In other words, Piero and Ruggero treat him visibly as the recipient of their answers, i.e. as an ‘interviewer’, ‘assessor’, etc. Secondly, Ruggero’s decision to introduce an alternative place formulation in line 3 appears also to exhibit a relevant membership category. In fact, being capable of delivering an additional spatial description makes him recognizable as a competent member of the community that the participants are talking about, just as Piera. Thus, if it is true that “the capacity of calling things by their names is a sign of social competence” (Auer 1983: 184),¹² then we may also support the idea that social competence is also displayed by the ability to attribute an array of possible descriptions to names.

4. Conclusions and perspectives

The aim of this paper has been to compare fieldwork methods in historical toponomastics and in *interactional onomastics*, as I call the study of name usage in naturally occurring interaction. Important differences have been noted with regard to data collection and treatment. We have seen that toponomasticians aim at gathering a maximal array of place names that are perceived as “existing” and “having existed” before and beyond the researcher’s fieldwork. Being rooted in the philological research tradition, this method is concerned with the thorough documentation of attested toponyms. The methods that have developed are thus suited to the specific scopes of this kind of research. However, it is notable that data collection procedures have remained practically unchanged over the decades – irrespective of the recent methodological developments in qualitative linguistic approaches. In presenting an interactionally-oriented approach, I have aimed to illustrate a field method that allows for a contextualized and praxeological analysis of place names. Fieldwork methods are patently shaped by the researchers’ analytical interests and by the actual analysis the data will be subjected to. Seen in this way, data are not just ‘collected’ – as if they had an independent existence in the field – they are rather constructed by the researcher with regard to his or her specific scientific needs and research questions.

Toponomastics and interactional onomastics visibly pursue different objects of research: the former is interested in specific units of language (place names), the latter in particular practices, such as referring to a location. This praxeological rationale requires that the analyst take into consideration a range of linguistic (and possibly other) resources that participants employ when referring to space, that may or may not mobilize toponyms. This way of proceeding seems sensible also with respect to onomastic research questions. Indeed, most onomasticians agree on the fact that (place) names are coined from so-called appellatives, i.e. non-onymic referential expressions. But while onomasticians have developed powerful methods that allow them to trace a place name back to earlier appellative descriptions (which at this point gain analytical interest), they have developed little interest in non-onymic formulations that are used in present-day language. It is my belief that it might be of interest to document recurrent appellative descriptions of places as currently used in natural conversation, as they might represent a first step towards becoming names and thus be a starting point of a process of onymization. Put differently, onomasticians have to

cope with the following problem: if the object of analysis is ‘proper’ names, then the researcher has to decide at what moment a documented place formulation can be said to comprise a sufficient level of *properhood* (Coates 2006) to be considered for analysis.

The above considerations show that the category of *place name* – just as many other analytical categories employed in onomastic research – refers to a porous, malleable object of research. It can be defined for the researcher’s practical purposes – but these rarely match the purposes for which social actors use place names in their interactions. Place names are but one possible resource available to participants for referring to space. Future research in interactional onomastics should therefore explain *how* participants orient towards a specific treatment of place names (with respect to appellative formulations). This would provide an emic, participant-centered account for the description of what onomasticians, linguists and language philosophers call a *name*. A further research desideratum relates to the systematic analysis of the sequential and praxeological environments in which place names occur.

Transcription conventions

/\	rising or falling intonation of the preceding segment
↑↓	rising or falling intonation of the following segment (dotted underline)
(1.5)	timed pause in seconds and tenths of seconds
[]	beginning and end of overlap
=	latching
xxx	inaudible segment
()	dubious hearing
((cough))	transcriber’s comments
<u>video</u>	stress
EXtra	high volume
doMAni	middle-high volume
°opera°	low volume
> <	fast talk
:	stretching of prior syllable
par-	cut-off
^	liaison
'h	inbreath
h'	outbreath
˘	glottal closure
ca ^{hh} sa ^{hh}	pronounced laughing

Notes

- * The interactional approach to the study of toponyms and spatial descriptions presented in this contribution is central to a project currently underway at the University of Berne. This project, entitled “The constitution of space in interaction: a conversation analytic approach to the study of place names and spatial descriptions” is directed by the author of this paper and currently benefits from the contribution of two other members, Anne-Danièle Gazin and Anna Claudia Ticca. A former member, Roberta Iacoletti, made an essential contribution to collecting and transcribing the data. I thank the Swiss National Science Foundation for generous support for the period 2008-2012 (project number PP001-119138). I also wish to thank Guy Puzey for revising my English in this paper.
1. Even Ferdinand de Saussure, who excluded proper names from his investigations on the linguistic sign, conducted etymological analyses of some place names in the French-speaking part of Switzerland (see de Saussure 1922: 604–607).
 2. Egli’s work also reflects the evolutionistic climate of his time: in fact he concludes that the “lower” the cultural degree (*Kulturstufe*) of a community, the more descriptive are its place names, which are thus based on common names (such as *lake*, *mount* etc.). “Higher” cultures have, according to Egli, far more complex, semantically opaque place names (see Egli 1872: 18).
 3. Linguistic geography represents a further interface between philology and geography. The first linguistic atlases were published in the last decades of the 19th century: in 1881 Jules Gilliéron issued the *Petit atlas phonétique du Valais roman*, while in 1889 Georg Wenker published the first map of the *Deutscher Sprachatlas*. The most influential oeuvre of linguistic geography, Jules Gilliéron’s and Edmond Edmont’s *Atlas linguistique de la France*, was printed between 1902 and 1910.
 4. An example from current Swiss toponomastic research on microtoponyms illustrates the demand for completeness. Waser (2004: 354) states that toponyms should be documented ‘without gaps’ (“das Namengut [soll] lückenlos erhoben und bearbeitet werden”) and posits an obligation (“Anspruch”), to collect all the names, present and past, given to a topographic area.
 5. “Der Einsatz eines Tonbandgerätes kann zu Beginn für nachträgliche Kontrollen dienlich sein. Mit zunehmender Übung verschafft das Gerät nach meiner Erfahrung keinen großen Vorteil mehr, es sei denn, die Gespräche sollen als Tondokumente archiviert werden” (Waser 2004: 355).
 6. In the German-speaking part of Switzerland fervent debates over the official forms of microtoponyms surface periodically and are generally about whether a more “dialectal” or a more “standard” orthography should be adopted. This dispute has been going on for more than a century and was already documented by Egli (1886: 360).

7. Among the different kinds of place formulations that Schegloff (1972) describes, the reader might miss what we could call *deictic formulations* (e.g. *here, there*) as one further resource participants use for spatial reference.
8. The concepts of *place* and *space* have been theorized mainly among geographers. Tuan (1977: 54) described *place* as a corollary of human presence: “enclosed and humanized space is place. Compared to space, place is a center of established values”. For a constructivist understanding of *place*, see also Lefebvre (1974) and Casey (1997). For the purposes of this paper, I will use *space* and *place* indistinctively.
9. On the role of the video camera and of co-present researchers in the documented setting and on techniques for obtaining naturalistic data see Heath, Hindmarsh, and Luff (2010).
10. While the distinction between *emic* (i.e. ‘internal, endogenous’) and *etic* (‘external, exogenous’) gained particular currency in anthropology (see Dundes 1962; Harris 1964), the terms themselves were coined by the linguist Kenneth Pike (Pike 1954).
11. A further observation that corroborates this analysis is related to the language choice that Piera and Ruggero operate in this excerpt. The inspection of the whole corpus from which this excerpt is taken proves that Piera and Ruggero tend overwhelmingly to speak Friulian when addressing each other, while they use Italian when talking to Sandro – who is thereby categorized as a non-speaker (or non-fluent speaker) of Friulian.
12. “Die Fähigkeit, die Dinge beim Namen zu nennen, ist ein Zeichen für soziale Kompetenz” (Auer 1983: 184).

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Does the territoriality principle work in practice? The principle's applicability to the Romansh area in the Swiss Canton of Grisons

Matthias Grünert

1. Introduction

The “territoriality principle” is a legal term related to the territorial organization of states.¹ According to this principle, law is applied to the territory of a state (Viletta 1978: 309) or to parts of it, insofar as subordinate state levels are responsible for regulation. On the basis of the organizing principle which attributes competences to territories of a state, the linguistic territoriality principle attributes a restricted number of languages to political, administrative or juridical entities within a state (cf. Richter 2005: 145).

The sociolinguist Heinz Kloss and the political scientist Jean Laponce presented the territoriality principle as a means of protecting minority languages and compared it to personality-based principles (Kloss 1965, Laponce 1984: 157–164). Kloss distinguished the “principle of commitment” (which may be based on the self-evaluation of one’s linguistic identity or on the deliberate commitment to a language) and the “principle of disposal” (when languages of households are identified, by the individuals concerned or by authorities). Laponce opposed the territoriality principle to a series of rights attached to individuals: the right to speak one’s language, the right to be understood when speaking one’s language, the right to obtain education in one’s language and the right to ethnic identity. Whereas Laponce judged the territoriality principle as entirely positive, Kloss deemed it a less democratic method than the principle of commitment and noted that it did not operate only in favour of minority languages (Kloss 1965: 65).

The question of the territoriality of languages has been approached by researchers from various disciplines outside linguistics, such as jurisprudence, political science, economics, sociology and philosophy. Studies have focused on single languages or considered data about several languages, aiming to compare different political and legal situations. More general contributions have, on the basis of theories and procedures from

different fields, presented possibilities for policies in multilingual contexts (e.g. McRae 1975, Grin 1995, Parijs 2010).

The present paper addresses the question of territoriality with reference to the Swiss minority language Romansh, taking account of the contributions of jurists who were dealing with the legal situation in Switzerland in different moments and with different foci (Rudolf Viletta, Daniel Thürer and Dagmar Richter, the first two being involved in processes concerning the Romansh area). Furthermore, insights from a philosopher, Philippe Van Parijs, who since 1999 has been contributing to a conception of hierarchy between languages, will also be considered. Concerning the Romansh area, sociolinguistic data will be included in order to verify the suitability of conceptions and solutions proposed by the authors cited.

The subject of territoriality will be approached first by showing its importance in the common perception of the national languages of Switzerland (Section 2). After the presentation of different conceptions of the function and application of the territoriality principle (Section 3), some basic information about the geographical distribution of Romansh in the Canton of Grisons will be given (Section 4) and the efforts that have been made to enshrine the territoriality principle in the legislation of the Canton of Grisons will be outlined (Section 5). Finally the following question will be addressed: to what extent does the *linguistic territoriality regime*, as postulated by Van Parijs (2009: 163) seem to be realizable in the situation we observe in the Romansh area at present (Section 6)?

2. Swiss multilingualism and territoriality

Swiss multilingualism is traditionally linked to language areas: the German, the French, the Italian and the Romansh ones. Within these areas the traditional language is in most cases, i.e. in the majority of the communes, statistically predominant. What is brought into focus by this approach is the coexistence, within one state, of several language areas that are conceived of as quite homogeneous, thereby neglecting the multilingual repertoires of individuals and society.

Language management in Switzerland has been determined for a long time by this view: the regulation of official and school languages within the Cantons of the Swiss Confederation follows the *ius soli*, i.e. among the national languages the local one is (in a few cases, the local ones are) chosen whereas the non-local national languages are excluded as languages of

administration and as first languages of instruction at school (cf. Haas 2006: 1775). Even a traditional local language which is no longer majoritarian may maintain its status as official language and as school language of a commune. Such cases are observed especially in the area of the regressive minority language Romansh in the Canton of Grisons.

The territoriality principle, which has been enshrined in Swiss federal and cantonal legislation only in the two last decades, had in fact been applied in legal practice earlier in order to protect the homogeneity of language areas (cf. Richter 2005: 900–908, 913–920). The efficacy of this juridical instrument, however, is limited. It cannot generally impose a language in an area; what it does is prevent certain obligations in matters of local language being sidestepped. The territoriality principle is being evaded, e.g., when parents ask to send their children to a school outside the language area where they live, when a court decision is demanded in a non-territorial language or when a request to put up a sign in a non-territorial language is submitted. A tricky situation arises when the territoriality principle is applied against a minority language: in 1974 an inhabitant of the German-speaking commune of St. Martin in the Grisons was not allowed to send his children to the Romansh school of the neighbouring communes Tersnaus and Uors without assuming the costs himself (cf. Richter 2005: 916–920, Thürer and Burri 2006: 270).

A focus on territory is visible in Swiss censuses (Lüdi and Werlen 2005: 25), which admit only monolingual identities, i.e. only one “mother tongue” (in the censuses from 1860 until 1980) or only one “main language” (in the two last censuses of 1990 and 2000). Even if the censuses of 1990 and 2000 gave respondents the opportunity to mention several languages used in everyday life, one language of best command had to be selected. As a consequence of the obligatory commitment to one linguistic identity, the areas of three national languages, German, French and Italian, appear to be quite homogeneous, whereas the area of the Romansh language, whose speakers are thoroughly bilingual, sometimes having an equivalent or even a better command of German, seems to be an archipelago within the German-speaking area. This contrast is illustrated by Fig. 1, which presents the situation emerging from the 2000 census data.

The territory-focused approach to language was criticized in linguistics and political debates as being unable to cope with multilingual individuals and societies. Sociolinguists who are interested in describing linguistic variation and multilingual repertoires consider territory as a dimension where these aspects can be examined. Statistical data about the presence of

languages in a territory are taken as a framework within which further analyses can be carried out.

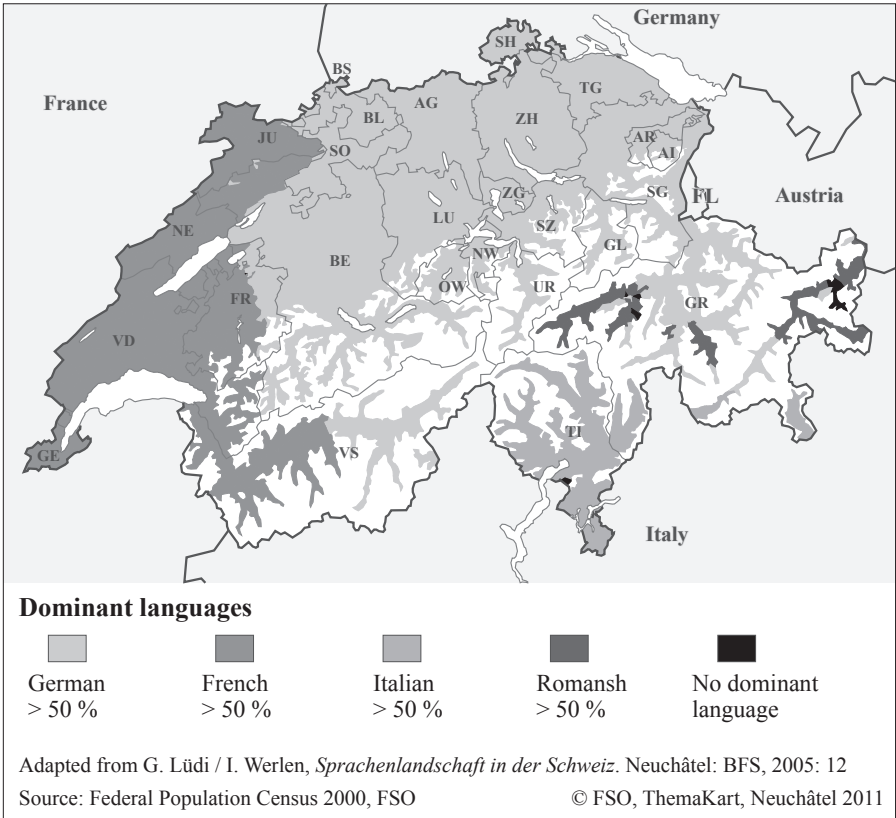


Figure 1. Resident population according to main language (language of best command): national languages by communes in 2000

Table 1. Main language in 2000

German	French	Italian	Romansh	Other languages
4'640'359	1'485'056	470'961	35'095	656'539
63,7%	20,4%	6,5%	0,5%	9,0%

In politics the territoriality principle is advocated by actors who are concerned about the preservation of regional and minority languages. In the recent history of Switzerland, this position emerged in the 1980s and 1990s (cf. Coray 2004), when efforts were made to enshrine the territoriality prin-

ciple in legislation, which had already been observed previously in legal practice. During the debates in the Federal parliament, however, a further point of view gained attention: the perception that there was a lack of mutual interest and exchange among the language communities of Switzerland. This problem was related to an excessive use of dialect (instead of standard German) by German-speaking Swiss and the spread of English as a lingua franca. Whoever was concerned about this question insisted on the communicative function of language (focusing on *communities*, not on *areas*!) and on the dynamic character of language, as opposed to the territorial, “patrimonial” point of view, which defines language as part of the cultural heritage that has to be preserved (cf. Coray 2004: 290).

The clash between the adherents of the territoriality principle, especially politicians from the areas using a Romance language, and the advocates of less top-down control was so strong that the two controversial principles which the Federal Council had proposed to enshrine in the language article of the Federal Constitution, i.e. the territoriality principle and freedom of language choice, were left out and in 1996 the revised language article was approved without any mention of these two aspects. However, three years later, on the occasion of the total revision of the Federal Constitution, a separate article guaranteeing the freedom of language choice was added and in the language article a new paragraph circumscribing the territoriality principle was included (cf. Coray 2004: 260–261):

The freedom to use any language is guaranteed. (SR 101, art. 18)

The Cantons shall decide on their official languages. In order to preserve harmony between linguistic communities, the Cantons shall respect the traditional territorial distribution of languages and take account of indigenous linguistic minorities. (SR 101, art. 70, al. 2)

A remarkable term in the paragraph concerning the territoriality principle is *linguistic communities*. The term had not been used before in the Swiss Constitution, which previously identified only the Confederation and the Cantons as political actors (cf. Werlen et al. 2011: 13, Coray 2004: 287–290). In the past, *community* had referred to the solidarity within the nation (cf. Coray 2004: 288), encompassing all speakers of all national languages. The identification of linguistic communities came up during the debates of the 1980s and 1990s when efforts were made to improve comprehension and interaction among the speakers of the different national languages.

The traditional territory-focused approach to Swiss languages, on the other hand, determines the wording concerning the language areas in the

Federal Constitution article quoted. This is especially striking in the German and in the Italian versions, which talk about “die herkömmliche sprachliche Zusammensetzung der Gebiete” and “la composizione linguistica tradizionale delle regioni”, i.e., literally, “the traditional linguistic composition of the areas”, as if the space under consideration resulted from an assemblage of separable unities. The speakers inhabiting these areas and using these languages are left out (cf. Werlen et al. 2011: 14).

3. Views of Swiss jurists and a Belgian philosopher

The call for strong protection of the Romansh area which led to the revision of the federal language article of the 1980s and 1990s is closely connected with the Romansh-speaking jurist Rudolf Viletta. With his thesis about language rights in Switzerland (Viletta 1978) and with a series of publications and public appearances in the 1970s and 1980s, Viletta stood out as an advocate of a strict implementation of the territoriality principle in favour of Romansh. His claim is based on the observation that, in spite of the application of the territoriality principle in legal practice, the freedom of language choice turns out to be stronger in the traditional area of the smallest language group in Switzerland.

In 1982, the government of Grisons mandated the jurist Daniel Thürer (professor at the University of Zurich from 1983 until 2010) to write a report on the suitability of applying the territoriality principle in order to protect Romansh more effectively. Thürer evaluated the situation by taking into account the particular historical and juridical conditions of Grisons and the possibilities offered by the current law on the federal and cantonal level. The fact that the Grisons had emerged as a federation of communal corporations with heterogeneous linguistic and confessional affiliations, explained, according to Thürer, their low interest in regulating the use of languages on their territory. Or, put differently, this task was traditionally delegated to communes (Thürer 1984: 260–261). So it was understandable that the cantonal legislation lacked even a basis from which an obligation to protect a territory could be deduced. According to Thürer, the federal legislation of that moment, which was limited to article 116 of the Federal Constitution, did not allow specification of the content of the territoriality principle. The article of the Federal Constitution just mentioned four national languages – German, French, Italian and Romansh – fixing the first three as official languages of the Confederation. In his conclusion Thürer states,

however, that the Canton would be obliged to act if a national language was especially endangered (Thürer 1984: 265). Thürer did not pronounce a judgment on the degree of endangerment of Romansh, but he recommended that the protection of linguistic and cultural minorities be at the centre of the revision of the Federal Constitution (Thürer 1984: 266). In later publications, Thürer points out that in linguistically mixed areas, solutions could not be found by simply quoting the territoriality principle, which aims at maintaining linguistic homogeneity (Thürer 2005: 165, Thürer and Burri 2006: 271), but that nevertheless a stricter application of the territoriality principle in favour of minorities would be appropriate (Thürer 2005: 163).

More recently, the territoriality principle with reference to languages has been the subject of a series of publications of the Belgian philosopher Philippe Van Parijs. The languages considered by Van Parijs are not only minority languages in the strict sense, but also languages that are overshadowed by the dominant national language, although they are in the position of the dominant language in another country, as well as dominant national languages that are overshadowed by the global lingua franca English. Van Parijs proposes the following distinction between dominant and dominated languages:

- a) Generalized unilingualism: the dominant language is imposed in the whole state and the dominated language is gradually replaced.
- b) Generalized bilingualism: the state offers its services in two languages, but in social practice one of them will be weaker, and thus “this soft bilingualism is just a milder, slower, more covert but no less inexorable form of generalised unilingualism. This is so because of a process perceptively described by Jean Laponce: the more kindly people behave towards one another, the more savagely languages treat each other”. Whereas languages can coexist beside one another as long as there is little contact between them, in a bilingual society “one language gradually drives out the other” (Parijs 2000: 241).
- c) Non-territorial separation: besides areas that are attributed to single languages there are linguistically mixed areas. The difficulties which this combination of territorial and personal federalism faces in Belgium suggest that there is no better solution than territorial separation.
- d) Territorial separation: Van Parijs concludes that the protection of languages, which he deems necessary, “requires some sort of territoriality principle to be enforced”. The fact that “relations between linguistic communities have on the whole been significantly better in Switzerland than in Belgium, Canada or Spain” (Parijs 2000: 244) proves the validi-

ty of this option. When classifying the Swiss regime as a regime of “territorial separation”, Van Parijs seems to be considering the French-speaking community, the strongest linguistic minority in Switzerland, rather than the Romansh-speaking one.

Van Parijs emphasizes that linguistic borders should not coincide with socio-economic borders: the linguistic sub-division of Belgium should be counterbalanced by inter-regional solidarity on the level of the welfare state and by an electoral system “that induces vote pooling across the linguistic border”. A further exchange between the language areas is imagined in a “common forum of discussion, which will increasingly be not in French [...], or in Dutch [...], or in German [...], but in the emerging first universal lingua franca” (Parijs 2000: 247).

It is notable that the relations outlined between the linguistic communities of Belgium are postulated by the author on yet a higher level, between the language communities of the European Union, including the communities that are majoritarian in the member states. Van Parijs’ conception presupposes individuals who are open to multilingualism: on the one hand they should use the lingua franca English for communication with any other language community; on the other they should accommodate to the language of their residence area (cf. Parijs 2007: 221, 240). The privileged role which a dominated language should play in a certain territory is presented as a counterbalance to its general submission to the dominant language. The proposed “set of legal rules that constrain the choice of the languages used for purposes of education and communication” (Parijs 2009: 163) presumes, however, that “there must be a sufficiently large and geographically concentrated number of people who regard themselves as sharing the same language and are willing to pay the cost, if any, of implementing a linguistic territoriality regime” (Parijs 2010: 192). As for Switzerland, the more homogeneous areas of two linguistic minorities, the French and the Italian ones, fulfil this criterion, whereas the Romansh community does not seem to reach the critical mass that would allow its language to play a privileged role within its area, “to be ‘queen’”, as Van Parijs (2009: 163) puts it.

4. The minority language Romansh in its traditional area

If one considers the presence of the four Swiss national languages in their respective areas, the situation of Romansh stands out as characterized by high instability. This may not be surprising if one takes into account that

Romansh is spoken by about 60'000 people and that it is not only the language of a small minority in Switzerland, but is also a language that does not receive any support from a strong community in a neighbouring country, as do German, French and Italian in Switzerland.

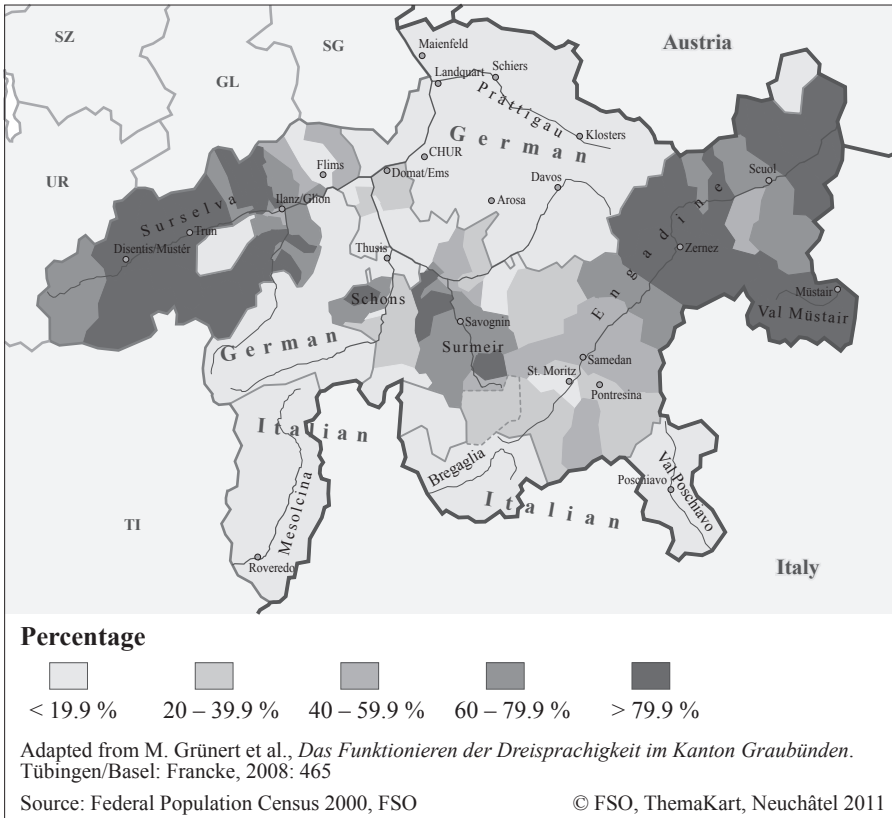


Figure 2. Romansh as main language and/or as a regularly used language in the traditional Romansh area

Furthermore, it should be noted that, as a consequence of emigration from peripheral to central areas, little more than half of the Romansh speakers (33'991) live in the traditional Romansh area. What we now call, according to Furer's proposal (Furer 1996: 35), the *traditional Romansh area* is the area where at least in one of the first four Swiss censuses to include data about languages, i.e. the censuses from 1860 to 1888, the majority of the population indicated Romansh as a mother tongue. This area differs little from the Romansh majority area of the 16th century, when Romansh, main-

ly in the context of the Reformation, became a written language. Furthermore, we can affirm that this area is still associated with Romansh, even in its most Germanised parts, where local names, inscriptions on buildings and a handful of speakers are the last relics of the traditional language (cf. Richter 2005: 868).

To this day, only three isolated parts of the traditional Romansh area, the two most outlying subareas, Surselva and the lower Engadine, and a subarea between them, Surmeir, have maintained a majority of Romansh speakers (cf. Fig. 2).

5. The territoriality principle in the legislation of the Canton of Grisons

In the Romansh areas of the Free State of the Three Leagues, a loose federation founded in 1471 and existing until 1799 on the current territory of the Canton of Grisons, Romansh was used in communal political life, whereas the only official language of the federation, for almost all its existence, was German. Only in 1794 did the Three Leagues recognize the two other languages, Romansh and Italian, spoken on its territory as official ones.

The Canton of Grisons, which has existed as a member of the Swiss Confederation since 1803, was only given a constitutional article concerning its languages in 1880. It was, however, an absolutely minimalist article, which, although in force until 2003, merely guaranteed the use of the three languages by cantonal authorities: “Der Gebrauch der drei Landessprachen ist gewährleistet” [The use of the three national languages is guaranteed] (*Verf. GR* 1880: art. 50). The *extent* of use of the three official languages on the cantonal level was not specified, nor was anything prescribed as to the use of the official languages on the *communal level*. This is a counterpart to the old language article of the Swiss Confederation, which from 1848 until 1996 determined the national languages and/or the official languages of the federal authorities, without prescribing anything as to the use of the official languages on the *cantonal level*.

The current constitution of the Swiss Confederation (cf. above) on the one hand lets the Cantons decide on their official languages, and on the other, in order to preserve harmony between linguistic communities, prescribes respect for the traditional territorial distribution of languages and the consideration of indigenous linguistic minorities (cf. Coray 2004: 350–369).

The particular implementation of the parameters of the Swiss Confederation in the Canton of Grisons emerges from a comparison with the other three Swiss Cantons that have more than one official language. These Cantons are situated on the French-German language border and present the following situations:

The constitution of the Canton of Berne has defined the territories of its two official languages, German and French, since 1950 (*Verf. BE* 1893: art. 17), when the territory of the French-speaking Canton of Jura (founded in 1978) was still a part of it. The new constitution, which has been in force since 2006, realizes its competence to decide on its official languages by including a top-down control of language areas: German (spoken by 84,0%) and French (spoken by 7,6%) are defined as official languages on the levels of administrative regions, districts and communes. Apart from a French-speaking and three German-speaking regions, there is a bilingual region (Seeland) consisting of a German-speaking (Seeland) and a bilingual district (Biel/Bienne). The latter contains 17 German-speaking communes and two bilingual ones, Biel/Bienne and Evilard/Leubringen (*SR* 131.212, art. 6, al. 1-3).

The constitution of the Canton of Fribourg is the only one which declares the territoriality principle as a guideline. The language article, which was revised in 1990, i.e. in the period of the above mentioned revision of the language article of the Federal Constitution, requires that communes choose one or both official languages, French (63,2% of the population) and German (29,2%), on the basis of the territoriality principle (*Verf. FR* 1857: art. 21, *SR* 131.219, art. 6, al. 1-3). The premise for declaring a commune bilingual is that its minority language is spoken by at least 30% of the population. Four districts of the Canton of Fribourg are French-speaking (Broye, Glâne, Veveyse and Gruyère, the latter, however, containing one German commune), one is German-speaking (Sense) and two are mixed, one with a majority of French-speaking communes (Sarine/Saane, where the city of Fribourg represents the only bilingual commune) and one with a majority of German-speaking communes (See/Lac) [cf. Lüdi and Werlen 2005: 93-95, Thürer and Burri 2006: 281]. In the district See/Lac, three communes are traditionally French-speaking although German is statistically predominant (cf. Richter 2005: 676, 690). The remarkable mention of the territoriality principle in the constitution of Fribourg can be explained by the less clear language border in this Canton, which continues to be a matter of discussion, and by the more difficult coexistence of the two communities, which can be linked to the following majority-minority rela-

tions: the French-speaking majority, as part of a minority on the federal level, has been reluctant for a long time to concede rights to the German-speaking minority, which belongs to the majority on the federal level.

The constitution of the Canton of Wallis does not define the territories of the two languages, French (62,8% of the population) and German (28,4%), which are declared to be official ones (*SR* 131.232, art. 12, al. 1). The districts of the Canton of Wallis belong either to the French area (Monthey, St-Maurice, Martigny, Entremont, Conthey, Hérens, Sion and Sierre) or to the German area (Leuk, Visp, Westlich Raron, Brig, Östlich Raron and Goms), i.e. within a district there are either only French or only German communes (cf. the list on the official Website of the Canton of Wallis: <http://www.vs.ch/Navig/navig.asp?MenuID=5079>). The lack of a territorial regulation in this case is due to the clear language border (cf. Werlen et al. 2010: 152–153).

The Cantons of Berne, Fribourg and Wallis are situated in an area where two strong languages with comparable prestige meet. Even if the language border is not everywhere very clear, it is more stable, and a fixation of language territories is simpler than in the area of the Grisons where Romansh and German meet, an area which in addition is characterized by a relative autonomy of communes as to the choice of their official languages.

In the Canton of Grisons, the question as to whether Romansh should be protected more effectively by the application of the territoriality principle was widely discussed in the 1970s and 1980s. Two bills which were submitted to public consultation in 1981 (*SpG* 1980) and 1985 (*SpG* 1985) intended to enshrine the territoriality principle by attributing the communes to a German, a Romansh, an Italian or a bilingual (German and Romansh) territory on the basis of regional tradition, consideration of regional integrity, presence of languages and demographic situation (*SpG* 1980: 252–253, *SpG* 1985: art. 2). Both bills were overwhelmingly rejected.

After this failure, a working group was commissioned to make suggestions for the language policy in the Canton of Grisons. The working group proposed, among other things, the creation of linguistic territories on the basis of associations of neighbouring communes that would commit themselves to using Romansh as the official language (*BASG* 1994, 2: 13–15). In 1995, the communes of the lower part of Engadine and of the neighbouring Val Müstair formed an official Romansh area; later, communes in Surselva and Surmeir followed suit (Gross et al. 2004: 19).

The new, completely revised constitution of the Canton of Grisons, which came into effect in 2004, contains a much more comprehensive lan-

guage article than the old constitution, a language article that regulates, among other things, the choice of official and school languages on the subordinate state levels:

Gemeinden und Kreise bestimmen ihre Amts- und Schulsprachen im Rahmen ihrer Zuständigkeiten und im Zusammenwirken mit dem Kanton. Sie achten dabei auf die herkömmliche sprachliche Zusammensetzung und nehmen Rücksicht auf die angestammten sprachlichen Minderheiten. (*BR* 110.100, art. 3, al. 3)

[The communes and wards shall decide on their official and school languages within their competences and in cooperation with the Canton. By doing so, they respect the traditional territorial distribution of languages and take account of indigenous linguistic minorities].

In the first draft of the law, the cooperation of communes and wards with the Canton was not yet required. Communes, districts, wards and areas would just have had to take into account the traditional minorities on their territories (*GP/Wortl.* 17/06/2002: 236–237). During consultation on the bill, the Romansh League, which is charged with defending the interests of the Romansh people, submitted a proposal according to which *the Canton* would have had to determine official and school languages on the basis of the traditional linguistic composition of the population, by agreement with communes, districts, wards and areas (Lia Rumantscha 2002). The version that was finally approved is consequently a sort of compromise between the first version, where the Canton delegated the responsibility to the subordinate state levels, and the proposal of the Romansh League, which envisaged stronger top-down control. However, the final version means a restriction of the traditionally strong communal autonomy in the Grisons.

During the debate on the constitution in parliament, some deputies requested that the principles defined in the language article be further substantiated in a language law. The demand has been satisfied: since 2008 a language law has been in force in the Canton of Grisons. This law does not stipulate the allocation of communes to linguistic territories as “given entities”, as the rejected 1981 and 1985 bills intended to do, but classifies the communes in terms of languages on the basis of census results (cf. Fig. 3). Communes where at least 40% of the population use a minority language in everyday life (at home and/or at work or at school) are declared “monolingual [Romansh or Italophone] communes”. Communes where less than 40%, but at least 20% of the population use a minority language in every-

day life are declared “plurilingual communes” (cf. BR 492.100, art. 16, al. 2–3).

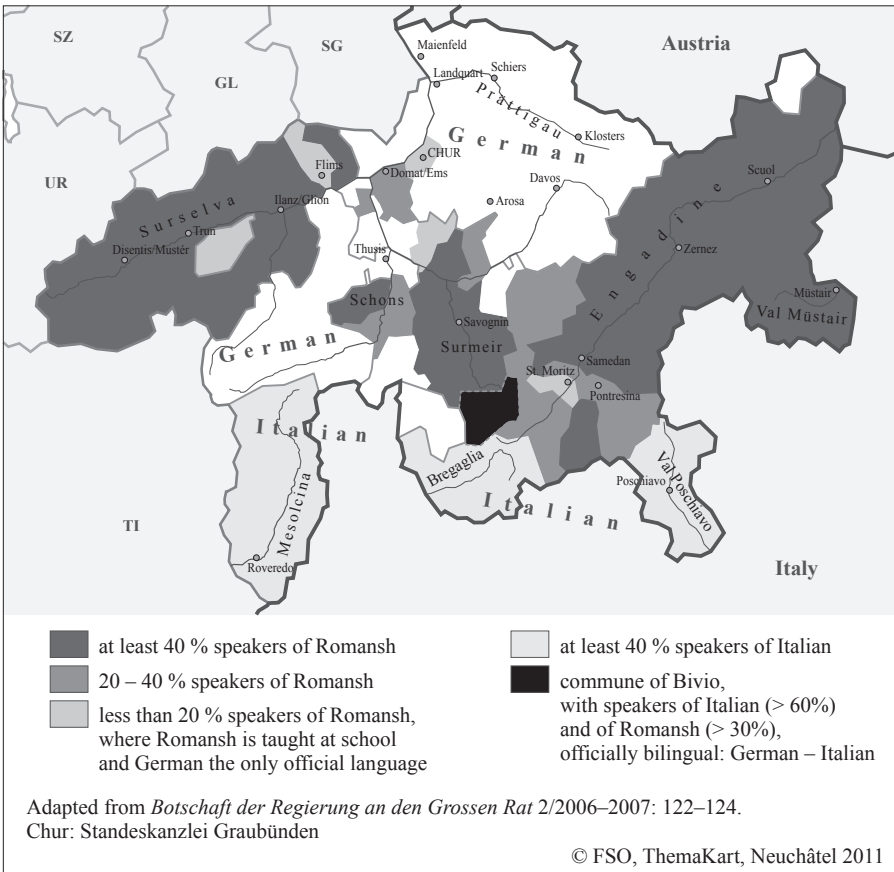


Figure 3. Minority languages in Grisons communes according to the language law

In the first draft of the law, however, the threshold for declaring a commune “monolingual” was set higher: according to it, a commune would have been declared “monolingual” (Romansh or Italophone) if at least 50% of the population indicated Romansh or Italian as their language of best command (*SpG* 2005: art. 17, al. 2, cf. *SpG/Erl. Ber.* 2005: 28, 38–39). This version was criticized by Romansh proponents, who argued that the criteria chosen did not sufficiently take into account the bilingual reality in which Romansh speakers live (*GP/Wortl.* 18/10/2006: 520–521), a reality, to use Grin’s words, with an *asymmetric diglossia* which requires “an

asymmetric policy that will help reduce the power of the larger language” (Grin 1995: 38). As the threshold was lowered to 40%, it is surprising, however, that the law still specifies “monolingual” communes, instead of specifying just “Romansh” or “Italophone” communes. The term used in law is in overt contradiction to the denominated reality, including official practice, which does not have to be exclusively monolingual.

The debate on the language law in parliament showed that the territoriality principle was interpreted in different ways. The law, as it was finally approved, defines the territory on a statistical basis, and consequently conceives it as a dynamic entity. A parliamentary representative criticized that the bill neglected the “traditionally grown linguistic landscapes”, “consolidating a chaotic linguistic landscape” in which single communes that do not reach the established threshold are excluded from the language area (*GP/Wortl.* 18/10/2006: 493).

It should be noted, however, that communes that up to now have not fulfilled the criteria prescribed by the law are not obliged to change their practice (*SpG/Botsch.* 2006: 115). In four communes with over 50% Romansh speakers, German is used as the/an official and/or school language (Ilanz, Schnaus, Lantsch/Lenz and Donat) and six communes with 40–50% Romansh speakers use German as the/an official language and have a Romansh (Zuoz and Madulain) or a bilingual Romansh-German school (Bever, Samedan, La Punt-Chamues-ch and Trin). All these communes, which should be “monolingual” Romansh communes on the basis of the last census data of 2000, are bilingual in their practice, which they can maintain according to transitional regulations contained in the law (*BR* 492.100: art. 27). Thus, the clause refers only to communes which still have a “monolingual” practice. As long as these communes have at least 40% Romansh speakers, they will have to fulfil the standards prescribed by the law. But even if they fall below the fixed threshold, a change to the category of “plurilingual” communes is not automatic, but has to be supported by two thirds of the voters in a communal referendum, after which it has to be approved by the government of the Grisons. The same procedure applies to “plurilingual” communes, which can pass into the category of German-speaking communes if the quota of Romansh speakers falls below 20% (*BR* 492.100: art. 24, al. 1-3).

What spheres does the territoriality principle apply to? The language law provides standards for the domains of education and administration, excluding commerce and the service sector. Concerning education, the law stipulates that “monolingual” communes use the local language as the lan-

guage of instruction (*BR* 492.100: art. 19, al. 1). With reference to the Romansh school this means that all primary school subjects are taught in Romansh for six years, except for German, which is taught from the third year on. During the last three years of the obligatory school period (7-9), however, the majority of lessons are given in German. In contrast, “plurilingual” communes can run – in contrast to Romansh schools – bilingual schools, where Romansh and German are used in all classes as languages of instruction (*BR* 492.100: art. 20, al. 1–2).

As for administration, the local language has to be used in communal assemblies, for referendums, in official communication and publications, in official correspondence with the population, on signs of communal offices and on name plates of streets. “Monolingual” communes only have the obligation to use the local language, with the use of German, however, not excluded (*BR* 492.100: art. 17, al. 1). “Plurilingual” communes, by contrast, have to consider the local language to an appropriate extent, with the use of German taken for granted (*BR* 492.100: art. 17, al. 2).

6. The applicability of the territoriality principle to the Romansh area

Van Parijs admits that “the implementation of a linguistic territoriality regime generates, in some cases, a set of tricky difficulties” (Parijs 2009: 169). Evidently, in the case of Romansh we face a number of problems that do not seem to allow this language to be “queen” (Parijs 2009: 163) in its area, not even in part of it.

First of all it should be noted that identification with the Romansh language is not as exclusive as is the identification of French- or Italian-speaking Swiss with their languages or the identification of Flemish-speaking Belgians with their language. Hence, a lack of respect for the Romansh language will be perceived less as a lack of respect for its native speakers, whose identities are not tied exclusively to Romansh, but, to a certain extent, to German as well (cf. Coray 2008a: 16–18 and 263–264, Coray 2008b: 4–5, 12–16, 20). The results of a sociolinguistic survey (Grünert 2009: 17 and Grünert et al. 2008: 268–269, cf. below Table 2) illustrate the strong ambivalence in the attitude of Romansh speakers. It must be admitted, however, that even the attitude of Italian speakers in the Grisons is characterized by considerable ambivalence, which undoubtedly differs strongly from the attitude of Italian speakers in the Canton of Ticino, which is traditionally completely Italoophone.

Table 2. Sociolinguistic survey of 2003/2004

	respondents who feel they belong to the Romansh-speaking group	portion of these respondents who feel they belong to the German-speaking group <i>at the same time</i>	respondents who feel they belong to the Italian-speaking group	portion of these respondents who feel they belong to the German-speaking group <i>at the same time</i>
1095 respondents from 18 selected communes	360	128 35,6%	352	72 20,5%
1798 respondents employed in cantonal institutions	427	298 69,8%	252	150 59,5%

This does not mean, however, that Romansh speakers do not at all expect the recognition of their language by speakers of other languages. In communes that are characterized by a strong presence of Romansh, locals expect foreign-tongued persons who settle there to learn Romansh. The following statement was made in Ramosch, a commune where, according to the last census of 2000, 92% of the population regularly use Romansh: “Chi chi nu rispetta la lingua, nu rispetta la glied” [Whoever does not respect the language, does not respect the people]. Newcomers are given a “period of grace” during which the use of German, the second language of all Romansh speakers, is taken for granted, but afterwards foreign-tongued persons are made to feel that they should integrate into the local community by using its language. Foreign-tongued persons who live with a local partner are exposed to particular pressure concerning their linguistic integration (Grünert et al. 2008: 69–73).

Quoting a passage from Van Parijs’ article “Grab a Territory!” (Parijs 2009: 165), we can affirm that the use of Romansh as a medium of schooling in strongly Romansh areas has an “impact on linguistic competence and hence on the spontaneous [...] choice of language in totally uncoerced private communication”. Romansh, which predominates in informal everyday communication, is supported by its importance during the first six years of local schooling and therefore functions as a medium of socialization for

children, even if their parents are foreign-tongued. Foreign-tongued adults with children who attend school are particularly motivated to learn the local language. The socialization of children in the peer group can also have an impact on communication with their parents: in Müstair (where 85% regularly use Romansh) a German-speaking informant said that her daughter refused to speak German to her, forcing her to use the local language (Grünert et al. 2008: 71).

In the above quotation of Van Parijs' article "Grab a Territory" one specification was left out: Van Parijs speaks of "the spontaneous (maximin-guided) choice of language in totally uncoerced private communication". The "maximin language" is "the language that systematically tends to be picked for communication in a context of linguistic diversity", i.e. "the language whose worst user uses it better than the other languages are used by their worst users". My omission is deliberate: the factor of competence hardly operates in favor of a minority language (in the strict sense) if non-natives are involved. The members of the minority have such a high level of proficiency in the majority language that it is very difficult for members of the majority to achieve a proficiency in the minority language which would impose its choice in a group consisting of natives and non-natives of the minority language. If Romansh is nevertheless used in interactions between natives and non-natives, this means that its choice is not maximin-guided. The identification of Romansh speakers with their language in strongly Romansh areas is an important factor in the use of this language with foreign-tongued persons, for these are made to feel that the local community would like them to adapt. On the other hand, the willingness of foreign-tongued persons to learn the local language is a condition for full social integration. We can conclude that linguistic integration is not a necessity even in strongly Romansh areas, but that it is quite important for the social well-being of whoever settles there.

In communes that use Romansh as the official language, foreign-tongued persons who are not willing to learn the local language are easily excluded from assemblies where voters have to decide on communal affairs. Moreover, they may not stand for election to the communal executive, communal council or communal commissions. In an interview, a German-speaking person who lives in such a commune said that she had withdrawn from local public life, because she was "tired of Romansh" (Grünert et al. 2008: 71).

The legal rules that impose the choice of Romansh in the domains of *education* and of *administration and local political life* encourage foreign-

tongued persons to learn the local language and hence contribute to the use of Romansh in uncoerced communication in everyday life. It should be noted, however, that there is an important domain of public life, namely commerce, where the use of Romansh is virtually unregulated. The only point that may be regulated in commerce is the use of Romansh for shop signs and signs of enterprises in communes where Romansh is the official language. Furthermore, enterprises of public transport use Romansh in announcements made over loudspeakers in trains and buses. As to shop signs and signs of enterprises, the protection measures in favour of Romansh may be quite strict, as decisions of the Federal Supreme Court of Switzerland prove (Richter 2005: 900–908).

In the local economy, the use of Romansh in communication with customers depends on the willingness of shopkeepers, sales assistants and entrepreneurs to consider the local language. The observed practice is the following: between Romansh speakers the use of Romansh in oral communication goes without saying, whereas the written use of Romansh (correspondence, bills) depends on the attitude of the entrepreneurs towards the local language and on their written proficiency in it. If this attitude is not positive enough and/or if this proficiency is not high enough, written communication between Romansh-speaking partners may occur in German, the *lingua franca* which can be used with all customers. In oral and written communication with non-Romansh customers, Romansh entrepreneurs never impose their language; they only use it with persons who are fluent enough in it. Usually, unknown customers are spontaneously served in German, whereas Romansh tends to be used with well-known customers.

Romansh is decidedly neglected on labels in shops and on packaging of products. Written information in Romansh can be found rather in local shops that do not belong to chains. Chains, which provide all shops submitted to them with written information, hardly consider Romansh, except for certain products from Grisons.

The lack of regulations in the domain of commerce undermines, to some extent, the territoriality principle supported by school and local authorities. In communes where tourism has a certain importance, the use of German in the domain of commerce is quite or even very strong (and in the upper part of Engadine the use of Italian as well). In such communes, non-Romansh-speaking persons who settle there are less exposed to Romansh inputs and, consequently, less encouraged to learn Romansh. If they learn Romansh, they have to insist on many occasions on using the local language, so the probability of Romansh becoming a regularly spoken language and a lan-

guage of good command is lower (cf. Parijs 2007: 218). The acquisition of Romansh, which is promoted by school and local authorities, does not get the necessary support from commerce.

The question as to whether *diglossia between a dominant and a dominated language may be stable* will be answered differently, depending on whether we relate it to the territory of a minority language in the strict sense or whether we relate it, as does Van Parijs, to the territory of a dominant national language submitted to the global lingua franca English:

Suppose the process has gone so far that practically everyone in a particular country knows the *lingua franca* in addition to the country's main mother tongue. Will there then not be a growing number of contexts in which the local language will no longer unambiguously be the maximin language even among natives? Think of the spread of English-language courses in continental European Universities. As this trend extends downward from postgraduate to undergraduate levels, there will be a number of domains in which natives of a particular language will find it easier to communicate with one another in English than in their own common mother tongue, or in a variant of their mother tongue perforated by strings of lexical borrowings and occasional full sentences in English. (Parijs 2009: 169)

Every Romansh speaker speaks German. In several contexts, Romansh is not the maximin language even among natives. Of course, the situation of Romansh is comparable only to a certain extent with the situation of languages which are the principal ones in their countries or in significant areas of their countries and which are used in higher education, as mentioned in the quotation. The average proficiency of English in non-English-speaking countries is far from being native-like, whereas the general level of proficiency in Swiss German in the Romansh area is native-like or at least very near to native proficiency (cf. Cathomas 2005: 154). In non-English-speaking countries, English may be dominant in certain domains, such as sectors of higher education or international companies, where the strong presence of staff from different countries imposes the lingua franca; in the Romansh area German is dominant in a much greater part of education and workplaces (domains such as agriculture, local trade, local primary school and, in part, local administration are excluded). The restricted domains where English is important or dominant in non-English-speaking countries do not really undermine the territoriality principle. A majority of the population of these countries does not use English regularly; in the Romansh area, however, the territoriality principle is definitely undermined by the

strong use of German at work (except for traditional local sectors) and in education (except for local primary school). The presence of non-Romansh speakers who do not integrate and of tourism are further factors that contribute to the current situation in which the Romansh area is perceived rather as a *bilingual Romansh-German area* or even, depending on the place, as a *bilingual German-Romansh* or (referring to the upper part of Engadine) as a *trilingual German-Italian-Romansh area*. This illustrates that if the local community has attained a certain degree of bilingual or plurilingual identity or even a predominant identity tied to the majority language, the application of the territoriality principle to state-controlled domains may no longer have the necessary impact on other domains that are essential for maintaining a language. The application remains partial and may just slow the regression of the minority language, which is too strictly linked to certain domains. Where the identity tied to the minority language is stronger, the use of the local language in the state-controlled domains interacts better with its use outside these domains, so the affiliation to the language territory reflects everyday life. The variable presence of Romansh within its traditional territory and the different perspectives that this language seems to have, depending on different local circumstances, shows that the application of the territoriality principle is subject to strong restrictions in a democratic and decentralized society where regulation has to be supported by voters and especially by the local community. The procedure of language legislation in Grisons reveals that the majority of voters can hardly be motivated to support a privileged position for a minority language. A further difficulty is the application of half-hearted measures to communes where the population identifies only partially with the minority language.

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Procedures of methodological triangulation in sociolinguistic research on multilingualism

Georges Lüdi, Katharina Höchle and Patchareerat Yanaprasart

1. Introduction

At the moment of writing the proposal for the DYLAN project in 2006, Anne-Claude Berthoud, François Grin and Georges Lüdi did not feel at ease when reviewing the existing literature on European multilingualism. For example, many interesting studies dealt with the territorial and demographic distribution of minority languages, but without identifying the real language competences of the populations. The analysis of questionnaires about language needs in the working world was completely independent of studies on processes of majoration/minoration in the oral interaction during meetings. The significance of the concept “mother tongue” in demolinguis-tic studies was not analysed in terms of identity value or communicative use. What informants told the researchers about their language practice was taken for granted and not questioned with reference to what really happens (and what tape recordings would show). Consequently, “additive” concepts of multilingualism (a person speaks one *or* the other language in a specific configuration) were far more dominant than “integrated” ones. We felt the main reason for these deficits might come from the focusing of a monomethodological approach of many studies on one *or* the other of different dimensions: (1) actual language practices; (2) social representations of multilingualism and linguistic diversity, as revealed through discourse; (3) the language policies of states or other public bodies and the language management of private-sector companies; and finally (4) the linguistic context, or “language environment” in which agents operate. We decided to spell these four dimensions out as analytical cornerstones of our proposal and identified an added value within the DYLAN project¹ in the analysis of the multiple relations within this four-dimensional scheme. For example, data on language needs and language practices collected by questionnaires in companies or with decision makers would not be taken for granted, but contextualised and analysed as discursive constructions that can complement, but also force us to reinterpret statistical figures. In the proposal (cf. a

short version in Berthoud 2009), we also pointed out that no dimension should *a priori* be assumed to have epistemological or phenomenological precedence over any other. This applies, by way of consequence, to the interrelations between them. Thus, a multimethodological approach not only means combining different facets; the resulting global view is more the sum of its parts. For example, representations about multilingualism influence policies and strategies regarding multilingualism; similarly, the ways in which a given linguistic environment is perceived by social actors may influence their representations about multilingualism; normally, each of these dimensions is analysed with particular methods, but only a multimethodological approach can give an account of the relations between them.

These considerations shall be applied in this paper to one of the most frequently asked questions about multilingualism in Switzerland; this question concerns the use of English, sometimes called the fifth national language (Watts and Murray 2001). It was one of the research questions subjacent to Iwar's and my analysis of the Swiss national census Swiss national census 1990 and 2000 (Lüdi, Werlen, and Franceschini et al. 1997; Lüdi and Werlen 2005 et al.). In the following, we will try to illustrate how the combination of methodologies that were used in the Basel DYLAN team may help to answer the question about the significance of English in contrast to German, French, Italian, Romansh, and other languages in Switzerland (Sections 2–6) and what might be the added value if we combine them (Section 7). In doing so, we will focus on the working world exclusively and mainly on the region of Basel where we did most of our fieldwork.

2. Analysis of legal documents

First, one could try to answer our key question on the basis of legal discourse. Art. 4 of the *Swiss Federal Constitution* (Federal Constitution of the Swiss Confederation of the 18th of April, 1999) names German, French, Italian, and Romansh as the *national* languages and Art. 70 says that the *official* languages of the Confederation shall be German, French and Italian and that Romansh shall also be an official language of the Confederation when communicating with persons who speak Romansh. English is not mentioned at all and thus does not have any official status. However, the very fact that since 2001, there is an English version of the Constitution on the web indicates that the social reality might be different.² Why, if not, should Felix Gutzwiller, a member of the National Council, have proposed that the Federal Government should adopt English as working language in

addition to the official languages on the 28th of November, 2007? For example, English plays an important role in the educational systems' regulations of foreign languages at school. Indeed, the *Swiss Language Law 2007* (Bundesgesetz über die Landessprachen und die Verständigung zwischen den Sprachgemeinschaften [Sprachengesetz, SpG] vom 5. Oktober 2007) does not make any explicit reference to English as a subject which is taught in school; the wording in Art. 15.3 is instead: "within the framework of their competency, the Confederation and the cantons commit themselves to set up a foreign language education providing for pupils' competences in at least a second national language and an additional foreign language at the end of compulsory school".³ The matter is however spelled out in the documents authored by the *Conference of Cantonal Ministers of Education*. In a decision dated March 25, 2004 (<http://www.edk.ch/dyn/13673.php>), for example, the list of common goals proclaimed for all cantons explicitly includes a knowledge of English ("pupils develop competences in the English language"⁴) the teaching of which shall start in the 3rd or 5th grade of Primary School. Other examples of language regulations concerning English at the federal level are the internal rules of the Swiss National Foundation that mostly insists on English for the writing of research proposals, and the fact that the great majority of master programs in both the Swiss Federal Institute of Technology in Zurich and Lausanne are offered in English only.⁵

3. The demolinguiistic approach

Second, a demographic approach is considered useful in order to measure the increasing role of English in Switzerland's working world. The figures from the *Swiss Federal Census* of 1990 and 2000 confirm that immigration of native speakers is not the main reason for this. In 1990, 8.9% of the population declared a non-national language as their dominant language and in 2000, they were 9%. Among the latter, English plays a marginal role while other languages like Serbo-Croatian or Albanian, without any major role in the country, are much more frequently declared as L1:

Table 1. Proportion of the 15 most frequent non-national languages in the Swiss population (in % and absolute figures), 2000

	in %	absolute		in %	absolute
Serbian/Croatian	1,4	103'350	Arabic	0,2	14'345
Albanian	1,3	94'937	Dutch	0,2	11'840
Portuguese	1,2	89'527	Russian	0,1	9'003
Spanish	1,1	77'506	Chinese	0,1	8'279
English	1,0	73'425	Thai	0,1	7'569
Turkish	0,6	44'523	Kurdish	0,1	7'531
Tamil	0,3	21'816	Macedonian	0,1	6415

Source: Swiss Federal Census, BFS

The level of frequency of English as a language spoken in the family is not much higher and did not increase much from 1990 to 2000 either (3.4% in 1990, 4.4% in 2000). The figures for the languages spoken at work, however, explain the growing awareness of the educational authorities of the importance of English. In all language territories, even though the local language prevails massively as the language used at the workplace, the second national language has been overpassed by the use of English that increased dramatically between 1990 and 2000 except in the Italian-speaking part of Switzerland:

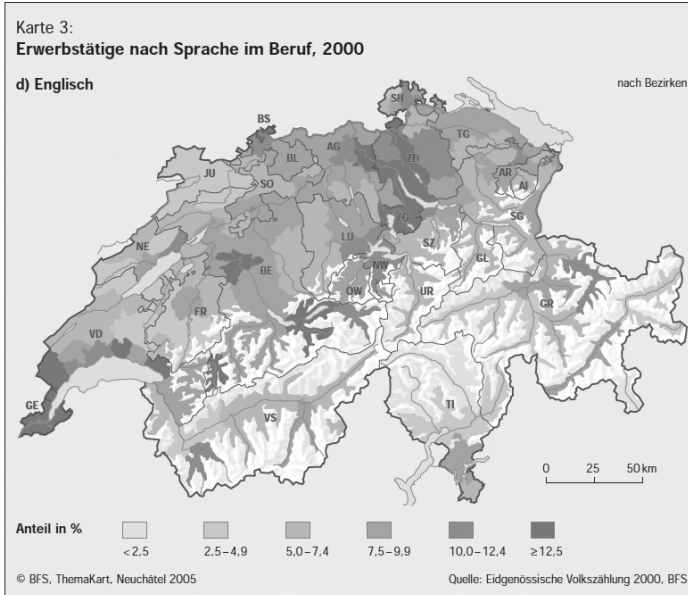
Table 2. Frequent use of the national languages and English in the working population in Switzerland, by language region (in %), 2000

	Local national language	Second national language	Third national language	English
German	98,0%	19,7% (French)	11,1% (Italian)	23,4%
French	97,9%	15,4% (German)	6,8% (Italian)	17,7%
Italian	98,6%	22,0% (German)	16,9% (French)	11,0%

Source: Swiss Federal Census, BFS

The use of English at the workplace is not evenly distributed among the socio-professional classes, nor is it among the regions. There are tremendous differences, e.g. between members of liberal professions in German-speaking Switzerland (54,5%) and unskilled workers in the Italian-speaking territory (2,7%), but also between the cantons (35,9% in Basel-City, 5,0% in Jura). As the following map shows, it is particularly frequent in the business centers in the metropolitan regions of Basel, Zurich-Zug and Geneva.⁶

Map 1. Proportion of English spoken at work in Switzerland, by district, 2000



According to a study run by the NFP 56, English is rated as the most useful foreign language by 86% of informants (92% in the German-speaking, 88% in the French-speaking and 77% in the Italian-speaking region) (http://www.snf.ch/D/NewsPool/Seiten/mm_08mar03.aspx).

A last quantitative result at the end of this section: We have measured the linguistic integration of the main groups of speakers of non-national languages by calculating the percentage of speakers declaring one of these languages as L1 *and* declaring the local language as one of their family languages.

Table 3. Integration of the local national language in the family repertoire in Switzerland, by declared L1 and language region (in %), 1990 and 2000

Language region	L1 Spanish		Portuguese		Turkish		English	
	1990	2000	1990	2000	1990	2000	1990	2000
German	25,4	36,6	18,7	24,0	28,8	31,7	58,8	50,9
French	47,1	55,8	36,0	43,6	38,5	38,6	53,3	51,4
Italian	54,7	72,1	40,8	54,5	35,3	38,6	45,4	55,4

Source: Swiss Federal Census, BFS

With values between 50,9% and 55,4% in 2000, the score of English is not particularly low. However (except in the Italian-speaking region) the figures for English are the only ones to have *decreased* between 1990 and 2000, a clear indicator for the growing acceptance of speakers of English using their language not only at work, but also in public, i.e. a lower level of pressure to integrate linguistically felt by Anglophones.

1. The analysis of the linguistic landscape

The percentages of speakers speaking a language at work on a daily basis certainly provide significant insights into the use of this language in Switzerland. But the presence of English is also observable in other forms. Modern urban spaces are characterized by a flow of signs (pictures, posters, luminous advertising, road signs, architecture, etc.). A new, vivid approach by sociolinguistics concentrates on the *linguistic or semiotic landscape*⁷ (Rosenbaum *et al.* 1977, Calvet 1990, Spolsky and Cooper 1991, Landry and Bourhis 1997, Ben-Rafael *et al.* 2004, Shohamy and Gorter 2008). This methodology was applied to Basel with the aim of getting a comprehensive picture of the sociolinguistic situation in general and the role of English in particular.

As one could guess from preceding research, the dominant language in the streets of Basel is German, the official local language. Throughout the city, road signs, requests and information targeted at postal agents, pedestrians and other groups within the population (e.g. signs advertising flats to rent, price labels, stickers prohibiting advertising mail at letterboxes, etc.) are always in German, not only where the producers of the signs belong to the political authorities, but also on private signs, be it in shops, in billboards, ads, etc. Even signers of foreign origin conform to this rule – and this without any legal pressure (unilingual signs in languages other than German are legal) – although they sometimes choose to use both languages in multilingual texts (Photo 1). This is, for example, true in the Klybeckstrasse, in the centre of a borough mostly inhabited by immigrants, where 79 out of 85 signs are unilingual German. In contrast, only 76 out of 110 are unilingual German in the Freie Strasse in the historic centre. The second frequent language in Basel's linguistic landscape is neither another frequently used official language of Switzerland (French, Italian), nor one of the major languages of immigration (see table 1 above), but English, with a particular dominance in the historic centre (24 out of 110 pictures in the

Freie Strasse vs. 2 out of 85 in the Klybeckstrasse). The *lingua franca* among immigrants and with the local population being clearly German, English is used with tourists, in trendy fashion shops and around the railway stations and the airport, sometimes with a symbolic rather than referential function (Photo 2); and languages other than German and English are clearly minorized (see Lüdi 2007 for full results).

DAMEN	HAAR/CABELO	CHF:
waschen, schneiden, föhnen		35.-
lavar, cortar, secar		
nur schneiden		
só cortar		
	kurz	25.-
	curto	
	mittel	35.-
	medio	
glätten, Maske	lang	45.-
escova, hidratação	longo	

Photo 1



Photo 2

There is, however, a part of the city’s linguistic landscape where English plays an even more important role than in the historic centre: the premises of the large international companies (chemical, pharmaceutical and agro-industry, banks, etc.) established in Basel, protected by fences, barbed wire, security agents and chaperonage and thus enjoying a kind of “extraterritoriality”. There, English is very present indeed as one would expect from companies declaring it to be their corporate language (Lüdi *et al.* 2009). But all the signs in the premises are not unilingual English. Many German, bilingual or multilingual tablets attest to a diversified approach to language choice in linguistic landscaping. Indeed, it reflects, in one significant way, the linguistic repertoires of the “scriptors” (a factor called *by whom* by Backhaus in 2007) and in another their perception of the addressees’ repertoires (*for whom*). Thus, supposing that visitors to <Factory A> in Switzerland speak English, the company decided that all labels in a small museum situated immediately behind the entrance should be in English. Nonetheless, each visitor, or group of visitors, is personally greeted on a video screen above the visitors desk in his or her conjectured language (German for a researcher from Basel University, for example); simultaneously, a spot changing every few seconds welcomes everybody in a large number of

the world's languages, e. g. Chinese, Japanese, Arabic, Russian, Portuguese, etc. These choices are determined without doubt by a top-down language management: it is *the company* that welcomes the visitors and tells them: “<Factory A> is not only a national, but also an international and plurilingual enterprise.” In contrast, unilingual German signs on the premises of <Factory A> refer to a social representation in which most of the collaborators within the company are German-speaking (Photo 3). Bilingual panels in <Pharma A> and <Agro A> convey a different self-image and suggest a more heterogeneous conception of the two companies' collaborators and visitors respectively, local workers and visitors being addressed in German (sometimes in French), expatriates from all parts of the world as well as international visitors in English (Photo 4). Consequently, different language choices made by mostly anonymous scriptors are to be interpreted as signs of their diversity. As mentioned before, these practices reflect the scriptors' views on the addressees' as well as their own competences and the particular language functions performed by the signs⁸ (cf. also Mondada 2004 : 258 who spoke about “la dimension polyphonique des représentations attribuées à des énonciateurs particuliers”).



Photo 3. Factory A



Photo 4. Pharma A

It is noteworthy that scriptors with a bare competence in German (as manifested by the spellings *Türe* instead of *Türe*; *Verpackungen* instead of *Verpackungen*; the wrong use of capital letters; syntactical errors) nevertheless choose German on the premises of <Pharma A> and renounce the use of their own languages, but also English, said by the *endoxa*⁹ to be “the language of <Pharma A>”. They pay no attention to normativity and choose the local *lingua franca*, German, for messages directed at their fellow workers, assuming that the latter are German speakers or, at the very least, can understand German.

We referred in two earlier studies (Lüdi et al. 2009, 2010) to a very pragmatic approach to language choice on the premises of <Pharma A> in the domain of safety instructions: the goal of preventing accidents clearly outweighs local traditions – that would privilege German – as well as some managers’ preferences for English. In addition, it should also be noted that it is one of the rare cases where French and Italian are preferred to English in multilingual signs. The hypothesis is allowed that the conative and referential functions (Jakobson 1960) bring signifiers to push up those languages that are really understood by the addressees as, for example, in the case of the – mostly immigrant – workers in charge of filling the liquid gas bottles or the building workers occupied on the premise of <Pharma A> (Photo 5). In other signs, however, the emotive function seems to dominate with priority given to the self-image the signifier wants to convey. Thus <Pharma A> insists on its self-perception as a global company using unilingual English signs wherever communication is not hampered (Photo 6). The same phenomenon can be observed in shop windows in the city that mostly give the most relevant information in German. But in contrast to the latter case, <Pharma A> also has a significant number of collaborators who do not read German, thus requiring many bilingual signs with parallel texts in German and English.



Photos 5 and 6. Pharma A

Without going into further details, we hope we have demonstrated the usefulness of the analysis of the linguistic landscape, not only as a relevant form of language practice, but also as an important source of information about the signers’ repertoires and their representations of those of their addressees.

2. Interactional linguistics

Our fourth methodological approach is about oral practices in the working place. Our considerations are grounded in the microanalysis of short sequences spread out over about sixty hours of tape recordings. There were dyadic and polyadic interactions of different kinds comprising meetings, discussion of results in a lab, telephone conferences, small talk during coffee breaks, oral presentations, etc. including self-recordings with clip-on microphones during entire working days. This methodology adds an important dimension to the statistical figures mentioned above. On the one hand, it informs us about the microcontexts and forms of language choices, confirming that the use of English at the workplace is very frequent indeed. On the other hand, the analysis of such sequences sheds light on the fact that not only does the use of English not really exclude other languages (mainly Swiss German, German and French), but that the apparently obvious principles OLON (“one language only”) or OLAT (“one language at a time”) are often not respected and take second place with respect to ALAST (“all languages at the same time”). In addition:

a) these interactions were rarely endolingual (among native speakers of English), but mostly exolingual (including non native speakers or exclusively among non native speakers); thus, they illustrate what is often called English as *lingua franca* (ELF) in the literature (for ex. Knapp and Meiercord eds. 2002, House 2003, Seidlhofer 2006, Jenkins 2007, Mauranen and Ranta eds. 2009);

b) most persons participating in these interactions are fluent in English, their level of competence being good or very good, but there are exceptions; the use of ELF excludes the latter or rather converts them into “by-standers” (Goffman 1981, 131ff.);

c) independent of the level of competence of the speakers, these interactions are frequently bi- or multilingual. On the one hand, ELF can be said to be always multilingual in principle, a dynamic form of “*linguaging*” including traces of the speakers’ other languages (Pitzl 2009, 315; Böhringer, Hülbauer and Seidlhofer 2009); on the other hand, explicit forms of multilingual speech including code-switchings or changes of the matrix language allow the participants to exploit their mostly multilingual repertoires in an optimal way. This form of language practice, also called “*multilinguaging*” or “*translinguaging*” (Pennycook 2007, García 2007) is particularly frequent in our corpus; three short examples must suffice for the purposes of illustration here.

Example 1

- 13 BH jetzt wäre ich wahnsinnig froh wir hatten immer gesagt äh (always) I switch
no I'd be very happy we had always said ehm
- 14 in english for a moment (.) we have said always that we'd like to use this a bit
- 15 informal way jetzt sitzen wir hier so etwas schön geordnet aber wir hatten
now we are sitting here kind of properly ordered but we had
- 16 immer gesagt wo drückt uns der schuh was was was liegt an an was ähm habe
always said where does the shoe pinch what what what is pending ehm what
- 17 ich für gerüchte gehört ähm (.) was beschäftigt mich was müsste man
rumours did I hear (.) what bothers me? what should we
- 18 eigentlich los werden gibt es da irgendetwas (.) ich finde es irgendwie etwas
get shot of? is there anything (.) I think it is in a way
- 19 schwierig so formell aufgestellt zu sein dafür aber gibt es etwas was was
difficult to be so formally aligned for that purpose but is there something that
- 20 euch am Herzen Herzen liegt (4 s.)
is close to your hearts?
- 21 WM I would just like to say that informal bit ähm (xxx) yeah I think that if we
- 22 moved the tables out and sat around both sides we have more contact because
- 23 this is a bit kind of a board meeting &
((general laughter))
- 24 & and I feel like I'm the head of the board & this is quite nice

This sequence was recorded during an informal meeting of the HR board of <Public service A>, a common breakfast shortly before Christmas. The majority of the participants is German-speaking, a minority French-speaking. One board member (Wanda M.) is British; she lived in the Suisse romande for many years and became very fluent in French. She understands German without any problem, but prefers to speak English. Despite the philosophy of the company that privileges the national languages, BH, the head of the section, switches to English in a strategy of inclusion in order to make his British colleague feel at ease while all the other participants continue to speak German.

This is entirely different in example 2, where the language used in the meeting of the editorial board of <Pharma A's> internal magazine changes completely from German to English as soon as the boss, a Canadian (PW), enters the room – and switches back to German as soon as he leaves the room again.

Example 2

- 1 SM: =jetzt rein (.) nur (.) aso auch von (.) von der&
now strictly only well also with respect to the
- 2 &grafiksprache die mir jetzt zumindest so bekannt ist&

- graphic language as far as I know
 3 &dass man halt braun (.) dass man das mit hellen tönen&
 you just combine brown with light shades
 4 &mischt mit blau[tönen]
 with blue shades
 5 CF: [aaaah]
 ((the door opens, PW makes his entrance accompanied by comments and
 a general brouhuha))
 6 PW: [ha ha ha ha ha]
 7 SM: now it's gett[ing]
 8 BK: [ha ha ha ha ha]=
 9 PW: the language is [(xxx) once again]
 10 SM: [we switch in English]
 ((general laughter))
 11 PW: what a benefit=
 12 SS: =we're only getting started
 13 JK: ((by side)) (xxx)
 14 PW: sorry about that again=
 15 CF: =that's great=
 16 PW: =yeah i'm sure it's perfect
 [((general laughter))]
 17 CF: [what eh]=
 18 PW: [yeah
 19 CF: =christoph you said we have to use white (.) who says &
 20 & we have to use white we ?

PW's entrance and the subsequent – manifestly habitual – change of language is properly orchestrated with laughter and comments (l. 5-10); PW's excuse (line 14) can be read as a tentative effort to repair any negative consequences directly to his face arising from his enforcement of English.

In the third example, a bilingual participant changes from the default language of a scientific meeting in a laboratory section of <Pharma A>, English, to German not because of the constellation of the participants, but as an auto-facilitating strategy. 8 out of 9 participants are German-speaking. In lines 272f., Tatjana, a Polish PhD student, is appeased by a “face flattering act” (Kerbrat-Orecchioni 1992) (dimension of equity) whilst Nina S. (NS) justifies the language change in this context with a higher efficiency of German:

Example 3

- 269 NS [well] at least they postulated that they found an effect (.)
 270 however if you look at ahm : at the data +(1)+

- 271 ((she rummages around in her papers))
272 okay ich mach das jetzt einfach in deutsch weil ich weiss dass die
okay I will just do it in German because I know that
273 tatjana sehr gut deutsch +versteh und+ auch sprechen kann dann
Tatjana understands German very well and can also speak it then
274 geht's nämlich schneller (h)
for it will take less time
275 ((somebody is laughing))
276 also wenn man sich die graphiken anschaut (..) wird (..) wird (..)
so if one considers the graphs one

Finally, our last example, from a laboratory of the same section, shows how JH, the head of the lab, a multilingual Moroccan with reduced competences of German, urges his collaborators to speak German and switches to this language from time to time as a means of including members of his lab with precarious competences in English, like Marianne (ML) and Mara (MS), who are lab assistants of Swiss and Hungarian origin respectively:

Example 4

- 1 JH maybe Marianne you can summarize in German ya what's eh you did
2 ML: mmh
3 JH: and what you expect
4 ML: mmh (...) also wir haben jetzt das rpmi protokoll (..) aufgemöbelt (.)
ehm well we pepped up the rpmi record
5 aufdatiert (..) und zwar haben wir diesen faktor (..) diesen verdünnungs- eh
we updated it in fact we added this factor this dilution ehm
6 fakt- correction factor noch reingegeben=
fact- correction factor

(some minutes later, still dealing with the same topic)
7 NS: so i think we can write like this with (..) müssen mit einem faktor von
we have to [sc. multiply] with a factor of
8 ehm=
9 JH: ein komma drei
one point three
10 NS: (...) und dann würd ich den satz dazumachen einfach um zu&
and then I'd add the sentence simply to
11 JH: =mmh=
12 NS: &erklären (..) wie es dann zu den auch verschiedenen abkürzungen hier
explain how it comes to the different abbreviations here
13 kommt weisch so nen correction factor das beinhaltet salzfaktor und
you know such a correction factor comprises salt factor and
14 substanzgehalt (..) und dann eben dieser verdünnungsfaktor=
the concentration of the substance and then precisely this dilution factor

- 15 ML: =jo salz git's jo nüm
yes salt doesn't exist anymore ((in Swiss German))
- 16 JH: maybe then
- 17 NS: =and then and then the calculation ja
yeah
- 18 JH: then here that should be the same (.) you say you explained between
19 brackets it takes äh (.) yeah one thing you could do (.) either
20 you do this nullkomma-fünfsechs milliliter medium without s9 then we
zero point five six
21 have one correction factor dilution factor
- ((much later; towards the end of the meeting, JH is briefing his team))
- 1239 JH then it's very good it's really really good
1240 because then Mara
1241 MS ((winces)) was müssen wir?
what do we have to do?
- 1242 JH kein problem mara ha:: hat eh microkern xxx drei
no problem mara does m. have xxxx three
1243 oder vier? (.) dann wir braucht nichts mehr
or four then we need nothing more
1244 gendata bis september oder oktober
gendata until september or october

In contrast to Examples 1 and 2, the formal hierarchy has no impact on language choice here; by switching to German, a language he speaks only with difficulties, JH accommodates himself to his collaborators. When proposing a participation frame, he waives his prerogatives as superior. His code-switching when addressing MS (l. 1240) changes her status from a bystander to an active, ratified hearer.

It is noteworthy that both, NS (Example 3) and JH (Example 4), bring forward the argument of higher efficiency for justifying the partial avoidance of English despite the company's endoxa; NS does it in the interaction itself, JH in a comment he made on the transcription in an interview later on:

In your daily work, you don't realise how you juggle with the languages. The aim is really to bring the message through and to be efficient. We have no time to waste.¹⁰

It is not wrong to say that these examples confirm – or at least do not contradict – the predominance of English in these companies. However, it is not “pure” English, and it is absolutely not used exclusively, but in alternation or even together with other languages, mainly the local ones. We will come back to this point in a moment.

3. The social representations of the agents

Of course, JH's utterance does not belong to the interactional analysis, but illustrates the fifth methodological approach that we used in our work: discourse analysis of a large number of semi-directed interviews conducted with key agents and, moreover, of official documents produced by the companies. In doing so, we are looking for the members' shared knowledge, in the case with respect to the role and use of English. It is a topic that is present in most of the interviews. Our Atlas-ti database contains over a hundred statements about English that can be subcategorized into three subtopics. As one would expect, their distribution depends largely on the type of company (international, national and regional companies) in which these statements were gathered.

3.1. English as corporate language

This topic comes up frequently among agents of international companies based in Switzerland (in our corpus <Pharma A>, <Agro A>, <Bank A>). "Our corporate language is English" is *endoxa*, i.e. shared knowledge endorsed by decision-makers or opinion leaders and diffused by intertextual processes throughout the companies, even with employees refractory to English:

generally speaking <Agro A> is predominantly English-oriented, like most multinationals (AA_PER_KB_090129_TR.doc)

mmh, the language of the management is English, 'business language is English' as they say, and this is really the norm in written communication, when something comes from the CEO, from the CFO, for example, than it's normally in English (BA_PER_HG_070228_TR)

Ok, I don't want to sidetrack. It's (important) to mention that English is a dominant language. Two overall dominant languages, English and German. German feels disenfranchised, the German speakers feel disenfranchised in this company (AA_PER_KB_090604_TR.rtf)

We expect the collaborators to move slowly towards one language only, English, for internal communication (PA_MAN_TB_090625_TR.rtf)

I don't want it either, or better: in my head I know I need it, I have to [sc learn it], that's it, but when the moment finally arrives, I cannot do it. And I also know, I've heard it x times¹¹, English is <Pharma A>-language, very well, I think this is very convenient for many people, yeah (PA_LABB_MS_070810)

It is noteworthy, however, that none of these utterances – and they are representative of our corpus – is claiming a general use of English in an unmodulated way. The restrictions go from „predominantly“, “the normal case for written language”, “a [and not ‘the’] dominant language“, “particularly when you are abroad“, “that we are slowly moving towards“ to “I know it would be necessary, but I can’t“, etc. These examples are typical of the handling of stereotypes: they are mentioned or quoted, but then their range of coverage is restricted (Oesch-Serra and Py 1997).

Some key agents even go further and state measures of diversity management such as the translation of the core messages into the languages of the employees:

With respect to the information for collaborators, it is kind of a struggle I have to go through <in my function [anonymised]>, so languages, the minimum we use is German, French, English; you must always tell it again because those from the holding company put pressure on for everything to be in English, but well I insist upon two national languages so it is always also in German and French, that is the way it is done. (PA_MAN_TB_090625_TR.rtf)

Well sure, the language regions are a big challenge, because we cannot expect that each collaborator in every function automatically speaks English and understands an English presentation sent to him. This means that we frequently ehm take the communication in the intranet, that is a classic case, it is ALWAYS in four languages, that is we formulate a message in one language, send it to the translation services, it is translated into the four, pardon, the three other languages, and then published that way (...) these are of course challenges we have to meet. We cannot do everything in English, it doesn’t work. (BA_PER_HG_070228_TR)

KB: And naturally we realised that to be able to drive home to employees across the world the real meaning of this, the real implications and or import of these eight capabilities, drive it home to them in an emotional way, we cannot do it by explaining to them in English, a second language or a third [language.] (...) and we could very easily have said this is for leaders and this is a company where everybody CAN speak English so let, let’s give it to them in English. (.) But the depth which is our foundational principle of the cultural alignment (...), which is how is it linked to moving people in deeply resonant ways, (...) it needs to be understood,

GL: In another way than just in a [lingua franca]

KB: [in another way, yes] in a lingua franca intellectually processing it. (...) And therefore we had it translated (AA_PER_KB_090129_TR.doc)

In other words, we clearly observe a case of *polyphony* in the *endoxa* of these companies¹² as differently stated by their agents, whose images of the

status of English and other languages respectively are not entirely compatible. Note that diverging statements frequently come from the same person. Some voices insist on the economy of unilingual communication, others on the heterogeneity of the workforce, and still others bring forward arguments of more equity, but also higher creativity and quality of work wherever people can make use of their own language.

3.2. Which use of English?

Inspecting the agents' statements about their personal use of English (the following examples come from <Factory A> and from <Bank A>) helps to understand better their answers to the question of their regular use of English at work.

There is definitely a shared knowledge (*doxa*) that English is important; however, we frequently observe various forms of contextualisation of, i.e. distanciation from the stereotype concerning the own experience. In some cases, the 'frequent use' is attributed to colleagues:

KH is a lot of English needed in <Factory A>?

NK I think so, well not me as a design draughtswoman, but the project leaders and the construction engineers more likely (...) also telephone calls with China now that we have opened [sc. a new branch] there, and when they call, it's just English (FA_APR_NKCW_090709_TR.rtf)

In other cases¹³, the use is restricted to some domains, like reading papers, or even to technical terms:

GL : What's the role of English in your daily environment here?

ER : Well, we have a lot of English. For the electronics, you can't change it. All the data sheets are in English, that's it, hence English is also compulsory. And English is also easier than German, I think. (FA_ETU_ER_080204_TR.rtf)

KH In which situation do you need English here for your work?

CW Well I don't need it at all

NK (h) I just need it on the drawings

KH Mhm

CW yes, but in fact you always need the same things, isn't it so?

NK not always, no, and from time to time we get emails in English when they come from the general management, they are in English also [so that] &

KH [yes]

NK & everybody can read them, those in Switzerland as well as those in France (FA_APR_NKCW_090709_TR.rtf)

KH: (4.16) Yeah. How much English do you need for your work here?

AB: (2) Well (.) How shall I say it? So all the data sheets are just in English, so when we construct something or so and have to get information about some component, the data sheets are only in English, well formerly there was also one or the other in German, but now everything has become so international and now it's only in German eh English, yes

KH: and elsewhere for- for (xxx) oral communication you use mainly German or English or both?

AB: Actually only German. It is (.) very unfrequent that I have to say something in English. (FA_APR_AB_090709_TR.rtf)

The rare communicative events where these employees speak English include occasional phone calls from abroad, contact with visitors and chatting with the cleaning woman.

An anecdote told by the former head of the language division of <Bank A> confirms these findings. After an American board member had complained that the employees in the bank's IT division were not able to sustain a conversation in English – and requested that all of them should prepare and pass the Cambridge Proficiency Exam –, a study mandated by the CEO revealed that less than 10% had to be fluent in English and that reading competence at a much lower level (A2 – B1) would be sufficient for the majority.

3.3. Uneasy feelings

A third collection of utterances refers to the bad feelings felt by some when it was necessary to speak English as an imposed foreign language, even from the perspective of almost accomplished bilinguals.

A mixed group collapses into English. And whether it's the right tactic is an open question. I think it isn't, from a certain perspective, that people who don't speak English proficiently, are not able to get the right airtime, people don't feel comfortable. (AA_PER_KB_090604_TR.rtf)

To translate everything represents additional costs so [to renounce doing it] would be a thing- an economic line of action ehm but this would generate unfairness (PA_MAN_TB_090625_TR.rtf)

She needs to understand the message in the shortest time possible. It's useless to speak English and then I have to explain it again, to tell it again, to wait for somebody to translate, so I try to be a translator myself. So here, it is really to facilitate things, that is to make everyone feel at ease, everyone understands, everyone at the same level, and that is it, efficiency means in fact, immediately,

when a meeting is finished, everyone already knows the message. (PA_LABB_JH_080118)

In encoding a problem, in perceiving and sensing it, in understanding, you are not collapsing into English. I mean that for me is the key. You're using the native language. Whether it's done by the individual, whether it's done by some group, and that gives insights to the problem. (...) How we can exploit, how we can take advantage of the role of language as I said as a toolkit, that a culture, a country uses, to encode its realities. And using that strategically as a way of positioning multilingualism for competitive advantage, rather than for communication effectiveness. (AA_PER_KB_090129)

And I feel, I mean at a very personal level, I also sometimes feel the need to speak my own language. You observe also with Karim, you observe that he found friends of the same nationality in the company. And then he is really happy. Despite his being really fluent in English, everything is marvellous (...) I speak differently in my own language, more freely, more openly, with more self-confidence and more security. (...) Many ideas get really lost when you choose English in such a situation, because everybody doesn't equally, doesn't feel equally at ease. (AA_PER_MM_100416)

We have tried to argue in other publications (Lüdi et al. 2009; Lüdi, Höchle, and Yanaprasart 2010) that, and explain why, a management strategy fostering linguistic diversity might enhance the employees' wellbeing, and consequently the quality of their work and the overall creativity of the company. At another level, Lavric (2007, 32) argues convincingly in favour of the compliance factor for communicative success in an exolingual setting:

The compliance factor (...) involves adapting to the language preferences of one's partner by speaking either their mother tongue, or a language they have a very good command of and/or have a preference for. (...) Complying with the language preference of one's interlocutor is a truly polite way of acting, because it means reducing one's own negative face or (linguistic) freedom of action in order to increase that of the partner. (...) Moreover, compliance under the positive face aspect will contribute to the positive face of both partners, one of them feeling important because they are being complied with, and the other getting the image of being a kind and polite person.

The shared social representations of many interviewees confirm this experience and, thus, statements of the science of management:

Assimilation into the dominant organizational culture is a strategy that has had serious negative consequences for individuals in organizations and the organizations themselves. (...) Those who assimilate are denied the ability to express their genuine selves in the workplace; they are forced to repress

significant parts of their lives within a social context that frames a large part of their daily encounters with other people. (Fine 1996: 494)

4. Discussion

Our approach to the question of English in Switzerland has been basically ethnographic, but also multimethodological, by analysing the context with demolinguistic tools, exploiting tape recordings of actual language use at work with the methodology developed by interactional linguistics, excerpting interviews and official documents with discourse analytical tools, as well as linguistic landscape with the usual instruments for this type of task. The real objective of our work was not to analyse separately the four dimensions of the DYLAN framework, but to highlight the multiple relations between them. For example, if we are interested in the way English is used at work and in the respective forms of language management, the question behind this interest is about the impact of management measures on the practice – and vice versa. In fact, our results in this aspect question firstly the “edenic” view of companies’ communication policy in which the firm appears as a unique social agent controlling integrated business communication (see, for example, Bruhn 2003). In oral interactions and linguistic landscaping, not only do we observe tensions between the *endoxa* endorsed by the management and the actual practice; in addition, it seems that significant fractures may appear where language management is influenced by contradictory factors like corporate language vs. guaranteeing the full understanding of security messages, and where language management measures are decided at different levels of the company’s hierarchy.

Due in part to the complementary approaches to the role of English in the workplace, the picture that results from our analysis is differentiated and characterized by a number of tensions. The first seems to oppose the legal framework (no mention of English, neither in the Constitution nor in the Language Law) to the “real” importance of English in the daily communication at work as documented in the national census. However, already here, things become more complicated. On the one hand, federal and cantonal legislation may differ, particularly in matters of education over which the cantons (and their coordinating body, the CDIP) have the sovereignty. On the other hand, there is a second, more general tension between legal texts (concealment of English) and the respective social representations (stressing its importance). Laws only partly reflect the ongoing discussions because they are by definition a product of the past, the manage-

ment and use of languages being on the contrary a dynamic process. This also means that the actual behaviour does not necessarily match the guidelines, neither the legal ones nor those emanating from the companies. Thus, the choice of English in meetings at <Pharma A> meets the expectations set down by the guidelines. However, in Examples 3 and 4, the company's philosophy ("our corporate language is English") is put into practice in two quite different ways. Sure enough, the hierarchy plays a role. However, PW and JH exploit their freedom in shaping two quite different frames of participation. But they do not design it alone. As stated by Schmitt in a study about the interactive construction of hierarchies (2002, 113-114 and 131), the formal hierarchy is indeed relevant in these processes, but only in so far as it is interactively performed by all participants. JH is accommodating to his collaborators by proposing a participation frame that partly excludes him and addresses MS with a code-switching thus changing her status from a bystander to a ratified hearer – for the sake of efficiency in his team rather than for reasons of equity, as he states himself in his comment. It seems to be a habitual form of behaviour; nevertheless it has to be ratified by the other participants interactively. And the same is true for a radically different behaviour, the choice of English in the presence of the boss in the meeting of the editorial board of <Pharma A>. The result is that there are various ways of using English, from endolingual-monolingual speech among (near) native speakers over different, more or less exolingual-plurilingual forms of English as *lingua franca* to the concurrent use of resources in multilingual speech drawing on all of the languages comprised in the interlocutors' repertoires.

Also, we have seen that social representations (the "doxa") of the company's agents are not monolithic at all, but pervaded by fractures. This polyphony is particularly striking where different voices can be identified in the discourse of one and the same person as in the following example, where TB confirms the existence of concurring agendas inside <Pharma A>'s executive suite.

Well the common denominator (...) the corporate language is English especially when you are abroad it's the language that one speaks in the holding (...)
with <Pharma A international> the local languages are totally neglected so everybody speaks only English ehm practically, well I would say if I can have a meeting in German, it's like a ceremony, isn't it, because it is beautiful, and a meeting in Swiss German (sc. the local dialect) once a month at most (original interview in Swiss German)

In the first part of the utterance, TB adopts the position of a spokesman for the company adhering to its position (*you are abroad, one speaks, everybody speaks only*), whilst in the second part he dissociates himself (*if I can, it's beautiful*) from the common knowledge, the *doxa*.

Finally, a similar fuzziness can be observed concerning the views and the management of linguistic diversity. At first, they reflect an additionist conception of plurilingualism that generates translation or a different language choice in a modified constellation of participants. We have found examples of that conception in the comments by agents of <Agro A> above or in Example 2; they also underlie most questionnaires about language choice by, and linguistic competences of, multilingual persons. In many cases, however, language practices as recorded in meetings and labs are different, hybrid, essentially mixed.

Current representations of multilingualism have not accounted for all of the consequences of this fact; and plurilingual people may find themselves stuck in a web of contradictions between consciousness of social environment and the modelisation of multilingualism (Cavalli *et al.* 2003). At first, one must stop considering the languages practised by a sole multilingual speaker as the simple addition of languages learned on their own terms, from a monolingual perspective, and replace the classical notion of competence with that of linguistic repertoire (Gumperz 1982) or even *verbal resources*.¹⁴

It was Dell Hymes (1971) who, as one of the first, situated communicative competence in the practical use of language, as an ability for use: “what speakers need to know to communicate efficiently in culturally significant settings”. Since this era, competence consists not only of the disposal of formal linguistic methods, but also of knowing how to enact them in an appropriate manner in a given situation (Pekarek Doehler 2005). We conceive of speakers as people who move in the world in a way that allows for the risk of stepping out of one’s habitual way of speaking, where the places of language are no longer neatly contained by the political/cultural geography of speech communities (Blommaert 2005, Rampton 2010). Our data, gathered in a range of fields and analysed with a set of different methods, prompt us to place the focus on practices, resources, styles, repertoires, discourses and genres and to conceive of languages as emergent from “doing being a speaker of a language” (cf. Mondada 2004) or “languageing” (García 2008, Pennycook 2010). In following these works, we consider multilingual repertoires to be resources which are interactively mobilised in order to find local responses to practical problems (see Lüdi

and Py 2009 for a further elaboration), and consider English to be part of these resources.

We are convinced that only a multimethodological approach that implies not only different types of data, but also a multidimensional framework for their analysis, will lead us to a much greater understanding of the increasing use and powerful role of English in all areas of the workplace.

Notes

1. Cf. <http://www.dylan-project.org> and Berthoud 2009.
2. In 2001, the Federal Chancellery established an English Language Service and in 2007, the task of making legislation available in English was formalised with an amendment to the Federal Chancellery Organisation Ordinance.
3. "Sie [Bund und Kantone] setzen sich im Rahmen ihrer Zuständigkeit für einen Fremdsprachenunterricht ein, der gewährleistet, dass die Schülerinnen und Schüler am Ende der obligatorischen Schulzeit über Kompetenzen in mindestens einer zweiten Landessprache und einer weiteren Fremdsprache verfügen."
4. "die Schülerinnen und Schüler entwickeln Kompetenzen der englischen Sprache"
5. The use of English is not new in Swiss universities, but it has gained in importance over the past decade. At the Federal Institute of Technology in Zurich two thirds of the Master's programmes are offered in a way that students do not need to know the local national language. In this section, the focus is on the federal level; other universities are maybe less advanced in this domain, but follow the same movement in direction of English as the preferred language of Higher Education (cf. Murray et al. 2000; Watts and Murray 2001).
6. See Lüdi and Werlen (2005) for full results.
7. We will not distinguish between these terms, but prefer the second one slightly more because it explicitly includes the multimodality of the signage in our terrains (cf. Jaworski and Thurlow 2009: „we are concerned here with the interplay between language, visual discourse, and the spatial practices and dimensions of culture, especially the textual mediation or discursive construction of place and the use of space as a semiotic resource in its own right“).
8. We deliberately refrain from quantifying our pictures (mainly 384 for <Pharma A> in two sessions, 130 for <Factory A>), every statistical intent being haphazard because we did not get equal access to the different subspaces (buildings, labs, offices, etc.) in both companies.
9. „ἔνδοξα derives from the word doxa (δόξα). (...) Aristotle uses the term endoxa (commonly held beliefs accepted by the wise/by elder rhetors and/or by the public in general) to acknowledge the beliefs of the city. Endoxa is a more stable belief than doxa, because it has been "tested" in argumentative struggles in the Polis by prior interlocutors“ (Wikipedia).

10. “Au quotidien, on ne se rend pas compte comment on jongle avec les langues. Le but c’est vraiment de passer le message et d’être efficace. On n’a pas le temps à perdre.”
11. See also Todorov (1981 : 98) for whom a discourse is not homogeneous, but an “entité traversée par la présence de l’autre”: “Seul l’Adam mythique, abordant avec le premier discours un monde vierge et encore non dit, le solitaire Adam, pouvait vraiment éviter absolument cette réorientation mutuelle par rapport au discours d’autrui.”
12. The term ‘polyphony’ (or multivoicedness) was coined by Bakhtin to explain the presence of several cognitive subjects in the novels of Dostoevsky where the author, or rather narrator, acts as one participant among others in the dialogue. If we assimilate the corpus of interviews into one text, we can then find a “plurality of consciousnesses, with equal rights and each with his own world that combine but are not merged” in the unity of the communicative event (Bakhtin, 1984: 6–7). Later on, Ducrot (1984) and his French colleagues refined the notion insisting on the fragmentation of the speaker in the framework of a theory of enunciation.
13. Notice that slightly different statements can be made by the same person, in the case NK.
14. We mean by this term an open set of grammatical and syntactic (and of course mimogestual) microsystems, partially stabilised and available to the speaker as well as the interlocutor. They often stem from different varieties of a language or from various languages, as well as from diverse discourse experiences. Resources do not boil down to a dictionary of prefabricated expressions; they are shaped like semi-organised sets of often heteroclite means, similar to a handyman’s toolbox. A free and active subject has amassed a repertoire of resources and activates this repertoire according to his/her needs, knowledge or whims, modifying or combining them where necessary; this happens mostly during interaction, in collaboration with (a) partner(s); as such, one can speak of shared resources.

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