

THE
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COMPANION TO
HISTORICAL
LINGUISTICS



EDITED BY
SILVIA LURAGHI
AND VIT BUBENIK



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Thomas Krisch is Associate Professor of Comparative and General Linguistics at the University of Salzburg. Major publications include *RIVELEX (Rigveda-Lexicon) vol. 1* (2006) (collaborators C. Katsikadeli, S. Niederreiter and T. Kaltenbacher), *Zur Genese und Funktion der altindischen Perfekta mit langem Reduplikationsvokal* (1996) and a number of articles, mainly on Indo-European syntax.

Eugenio R. Luján is Associate Professor of Indo-European Linguistics at the Universidad Complutense de Madrid. His research has focused primarily on morphological and semantic change in Indo-European languages. His publications concern Greek lexicography, Mycenaean, pre-Roman languages of Spain (Iberian and Celtiberian) and comparative Indo-European linguistics.

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Joseph Salmons is Professor of German and directs the Center for the Study of Upper Midwestern Cultures at the University of Wisconsin—Madison. His research focuses on speech sounds and language change. He edits *Diachronica: International Journal for Historical Linguistics* and is coeditor of the forthcoming *Oxford Handbook of Historical Phonology*.

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Editors' Introduction

Introducing a new handbook such as ours always implies asking what the new enterprise will bring to the field. Handbooks of historical linguistics are numerous; especially in the past two decades various introductory textbooks have appeared, written by leading experts in the field: suffice it to mention H. H. Hock, *Principles of Historical Linguistics*, T. Crowley, *An Introduction to Historical Linguistics* (1987,1992), H. H. Hock and B. Joseph, *Language History, Language Change, and Language Relationship* (1996), L. R. Trask, *Historical Linguistics* (1996, 2007), L. Campbell, *Historical Linguistics: An Introduction* (1998, 2004), M. Hale, *Historical Linguistics: Theory and Method* (2007). Such a monumental, and still quite recent, work as B. Joseph and R. Janda (eds.) *The Handbook of Historical Linguistics* (2003) could be thought to have exhausted the field, at least temporarily.

However, the field of historical linguistics is so wide and challenging that it can hardly be exhausted. Any new effort brings along different points of view, and any restatement of a specific issue, even by the same author, implies an advancement. Reconsidering the same matter from a different perspective and with the opportunity to incorporate recent research leads to new, often unexpected, results and contributes to the collective effort of advancement in science. This is not to say that our volume aims only at summarizing or reformulating shared wisdom and does not aim to distinguish itself among current handbooks of historical linguistics. On the contrary, we aim at opening new vistas for further research. On the one hand, we strove to cover such well established subdisciplines of the field as methodology, phonological, morphological, syntactic and semantic change, grammaticalization, language contact, regional and social dialectology, and causes of language change; on the other hand, our contributors endeavored to present fresh new ideas in their theoretical and empirical approaches. We tried to avoid, at least in part, the Indo-European bias, which, for practical reasons, remains common to our field, and included chapters on traditional topics of historical linguistics which draw on data from non-Indo-European languages. The functioning of the comparative

method, for example, is demonstrated with data from Algonquian languages, and change in grammatical categories by data from Afro-Asiatic languages.

Contributors to this volume include both leading scholars, who authored or contributed to the most authoritative current handbooks, and younger researchers, who bring new perspectives on historical linguistics; they all share the spirit that informed our planning of the book, and present original and often groundbreaking research on the topic of their chapters.

In Chapter 1 we start by outlining the history of research into historical and comparative linguistics and describing its sources (written and oral tradition, paying due attention to diatopic and diastratic variation), and we briefly introduce different types of writing systems in terms of their origins and development. As a special feature of this book we include a list of resources, consisting of literary and inscriptional corpora, both printed and electronic, for major languages as databases for further research in the field.

Part I on methodology features four chapters devoted to the classical comparative method, internal reconstruction, typology and universals, and language classification.

On the basis of data from the Algonquian family of languages, John Hewson (Chapter 2) concentrates on the continuing relevance of the important methodological concept of 'regularity of sound change' to the discipline of historical and comparative linguistics. He demonstrates that much of the low-level comparative and reconstruction work can now be done by automated methods, and suggests that graduate students should be taught to use this technology. In the case of polysynthetic languages, such as Algonquian, concordances of word formatives can also be made by automated methods for diachronic and synchronic research on word formation.

Brian Joseph (Chapter 3) shows the limits of the powerful method of internal reconstruction but also its significance in cases where there is no other corroborating data available such as when one pushes back the temporal frame for the proto-language even farther than the comparative method allows for.

Hans H. Hock (Chapter 4) discusses the role of general linguistic typology and universals in historical and comparative linguistics touching on the classical issues such as phonological reconstruction and the 'glottalic theory', and syntactic reconstruction and the PIE word order. Under typology of sound changes he focuses on the cardinal issue of system-balanced chain shifts; in morphology he focuses on typology and analogical morphological change in terms of its systematicity (directions of analogical change and grammaticalization); in syntactic change he pinpoints the strong correlation of word order typology with geography and language contact (e.g. the well-documented shift from VSO to SOV in Amharic).

Søren Wichmann (Chapter 5) discusses methods of joining languages in groups based on (different degrees of) genealogical relatedness under two

headings: character-based classification and distance-based classification. He deals with external language classification only cursorily and elaborates at great length on internal classification. He treats language classification as a subfield of general phylogenetics, a field traditionally dominated by biology.

The two chapters in Part II are devoted to phonological change: Joseph Salmons deals with segmental phonological change (Chapter 6) and Hans H. Hock with suprasegmental and prosodic historical phonology (Chapter 7).

Salmons develops key examples of types of sound change and outlines some major approaches to our understanding of individual sound changes (such as assimilation, syllable-based change and preference laws, coda neutralization and universal constraints on change, metathesis, dissimilation and perception, chain shifting and sound change in progress, and the 'life-cycle of sound change'). He pleads for a more nuanced approach than most theories to date which attempt to account for (virtually) all sound change with one entity or process, and shows the importance of a multipronged approach which pays equal attention to the issues of articulation, abstract phonological structure, prosodic structure, perception and social motivations.

Hans H. Hock focuses on change in suprasegmental properties (tone, accent) and other aspects of prosodic structure (such as prosodic phrasing and its effects). The issues discussed include tonogenesis, prosodic finality and accent retraction, accent protraction, avoidance of prominence clash, and phrasal prosody and linguistic change. Hock reminds the readers that the prosodic organization of utterances is relevant for the crosslinguistic tendency to place clitics in P-2 position and that, arguably, cliticization and Wackernagel's Law started out as prosodic phenomena.

Part III, devoted to morphological and grammatical change, includes three chapters: Henning Andersen (Chapter 8) in his chapter 'From morphologization to demorphologization' examines the continuity and change in the structure of words and morphological systems in Slavic, Germanic and Romance languages. Under morphologization (change by which grammatical expressions become clitics and inflectional affixes) he distinguishes morphologization from syntax, from word to clitic, from clitic to affix (univerbation) and expression reduction. Changes in inflectional morphology are subdivided into elaboration (paradigmatization of new grammatical categories), simplification (the loss of inherited grammatical categories), new combinations of grams, expression changes (esp. syncretism of expression), and reanalysis changes from expression to content indexes (within or among paradigms). Demorphologization is the reverse of morphologization including the types of changes by which grammatical affixes change into clitics or words (or expression elements with no grammatical function). Here Andersen distinguishes morphosyntactic emancipation (affix > word, e.g. Greek *ksana*- 're' > *ksana* 'again'), demorphologization due to regrammation (e.g. inflected definite article > focus marker in

North Russian dialects), and due to degrammation (e.g. the loss of inherited case systems).

Livio Gaeta (Chapter 9) introduces the concept of analogy and analogical change from the viewpoint of both earlier and current scholarship. He distinguishes the customary types of analogy: four-part proportion, paradigmatic leveling (both 'vertical' and 'horizontal' type) and less systematic types (contamination, backformation and folk etymology), and suggests that Kuryłowicz's and Mańczak's contributions can be reduced to three main tendencies. Gaeta views analogy as an underlying force of the faculty of language. He pinpoints that in its ability to refer to local relations (vertical/horizontal) analogy differs qualitatively from 'rules,' and submits that analogical models of language stand a better chance to grasp the forces which underlie our cognitive abilities.

Vit Bubenik (Chapter 10) analyzes changes in the nominal and verbal categories in Afro-Asiatic languages. The category of nominal gender is discussed in the context of counting in Semitic languages (the so-called law of polarity); also discussed are the phenomenon of 'broken' plural and collective nouns in Arabic and Ethio-Semitic; the reconstruction of Proto-Afro-Asiatic case and state systems and the trajectory to individual branches of the AA phylum; and the unsettled issue of the reconstructability of Proto-AA as an ergative language. The evolution of tense/aspect systems in individual Semitic languages is carried out in a 'whole-language perspective' by considering not only the exponents of aspect and tense but also those of diathesis and mood. Discussion revolves around the thorny issue of the rise of the contrast perfect vs. perfective in Central Semitic languages and the existence of a three-way contrast (imperfective—perfective—perfect) permeating the whole system of Akkadian (and reconstructible for Proto-Semitic). It is argued that its transformation into a two-way aspectual system of central Semitic is a result of several grammaticalization processes giving rise to analytic formations expressing unambiguously the progressive aspect and perfect (as known from Hebrew, Aramaic and Classical Arabic).

The four chapters in Part IV explore several standing issues in diachronic syntax: change in word order, the rise of configurationality, the rise and spread of subordination, and alignment.

Jan T. Faarlund (Chapter 11) opens his study of word order changes by drawing a fundamental distinction between two approaches: that of 'formal' vs. 'functional' syntax. While the formal approach is suitable to study 'reduction' (from 'free' to 'fixed' word order), the functional approach is more illuminating in explicating change by reanalysis and extension and reduction (e.g. in the trajectory from OV to verb-second typology.) Both approaches are in a sense complementary as exemplified by means of data from Old and Modern West Germanic languages.

Silvia Luraghi (Chapter 12) describes various phenomena connected with increasing configurationality in the Indo-European languages and attempts a unified explanation for them. She submits that free occurrence of discontinuous constituents and null arguments distinguishes non-configurationality of two types: head marking and dependent marking type. In the ancient IE languages, which are dependent marking, null direct objects seem to be relatively common, which leads to the conclusion, already present in traditional wisdom on PIE syntax, that an IE verb did not govern the case of its complement, and that in dependent marking non-configurational languages the verb does not have a syntactic valence. Put in terms of semantics, nominals are added based on the meaning of the verb; the change toward increasing configurationality also implies the grammaticalization of verbal valence.

Two major principles of language change are illustrated by Dorothy Disterheft and Carlotta Viti (Chapter 13) in their contribution on nonfinite and finite subordination. In the first section, Disterheft studies the evolution of the formal category of infinitive from a nominalization to a full member of verbal paradigms (indeterminate infinitives > acquisition of verbal syntax > acquisition of verbal morphology > unique infinitives > acquisition of tense and voice). By means of data from ancient IE languages it is shown that old and new constructions can coexist for a long time, and that morphology may be rooted in nominal paradigms while syntax starts displaying patterns typical of verbal complements. In the second section, Viti presents the evolution from parataxis to finite subordination as nonhomogeneous process with multiple paths in different languages. Latin and Ancient Greek, which possess a developed system of finite subordination (with embedding and *consecutio*), also possess a highly developed and grammaticalized system of infinitives. On the other hand, Vedic and Hittite, which retain nominalized infinitives, present a scarcely syntactically-categorized finite subordination with adjoining and lack of *consecutio*. It is argued that this suggests a parallel development of finite (from independent to dependent sentence, from adjunction to embedding, development of *consecutio*) and nonfinite subordination.

Geoffrey Haig (Chapter 14) defines three types of alignment: accusative, ergative and active/stative (or semantic) alignment, and studies the accusative-to-ergative shift on the basis of Ancient West Iranian data. Two solutions are offered: the agented-passive interpretation and the noncanonical subject interpretation. He concludes that at this stage of our knowledge we cannot formulate general and predictive elements of alignment changes. While an earlier holistic approach held that alignment constituted a major typological parameter, the later 'contingency' view assumes that different alignments may arise in various sub-domains of the grammar as a result of independent change. Haig suggests that alignment changes should not be viewed as the mere by-products

of 'blind' phonological changes, pointing out that in Kurdish the case marking in the ergative construction has bifurcated either towards the ergative construction or towards 'double Oblique' systems (as in Pamir languages).

Part V includes three chapters devoted to the study of grammaticalization and semantic change. Grammaticalization ('the process by which grammar is created') is one of the most thriving branches of historical linguistics.

Elizabeth C. Traugott (Chapter 15) surveys definitional and various substantive issues pertaining to the model of grammaticalization as reduction (the hypothesis of unidirectionality and its irreversibility), and grammaticalization as expansion (host-class expansion, and syntactic and semantic-pragmatic expansion). She identifies four major theoretical issues which appeared in the study of grammaticalization during the past decade: insights from construction grammar, motivations for the onset of grammaticalization, the mechanisms of analogy and reanalysis, and areal and contact studies.

Eugenio R. Luján (Chapter 16) explicates the basic tenets of word-level and sentence-level semantic change. In the first section he distinguishes mechanisms of semantic change (metaphor, metonymy, folk etymology, ellipsis), changes in the scope of meaning (broadening, narrowing) and changes in connotational meaning (pejoration, melioration). In the section dealing with sentence-level meaning he introduces the dichotomy of syntagmatic and paradigmatic changes (i.e. changes due to similarity in form and those due to similarity and contiguity in meaning). Manifold causes of semantic change (historical, social, psychological and those due to language contact) are examined. A deeper understanding of causation involves considerations of its regularity and directionality, the issues of polysemy, and diachronic pragmatics (the interface between linguistic structure and use).

Thomas Krisch (Chapter 17) introduces his chapter on etymology by a short history of this oldest subdiscipline of linguistics, as instantiated in Plato's dialogue *Cratylus*. He compares and evaluates classical and modern approaches to etymology by providing the 'right' etymology of the theonym Poseidon—the syntagm 'Oh lord of waters'—replacing Socrates' fanciful folk etymology *posí-desmo-* '(one) being a bond for the feet.' Several etymologies of more recent formations (*street*, *creed* and *podcasting*) are provided.

Part VI features chapters on language contact, regional and social dialectology and the causes of language change. The study of language contact is nowadays recognized as a subdiscipline positioned between historical and sociolinguistics.

Bridget Drinka (Chapter 18) offers a brief synopsis of early works and continues with the issues of areal linguistics, the role of the study of pidgins and creoles in the development of modern contact linguistics and the effects of contact (the role of calquing, metatypy and replication). Under theoretical issues she discusses contact at the micro- and macro-level, contact and typological

changes, and the role of bilingual/bidialectal speakers who possess access to the social values of features in both systems.

J. K. Chambers (19) distinguishes two branches of dialectology: dialect geography and sociolinguistics, the latter beginning in the 1960s with the dissemination of W. Labov's ideas. He elaborates on their fundamental differences in their approach to independent variables of class, age, sex and other social attributes: qualitative vs. quantitative, univariate vs. multivariate, and categorical vs. variable. He demonstrates how to draw historical inferences from regional variation available in dialect atlases, and inferences from social variation based on the study of nonmobile, older, rural males (NORMs) vs. mobile, younger, urban females. Both branches of dialectology view language change in motion and shed considerable light on the mechanisms of its change.

Silvia Luraghi (Chapter 20) explores the causes of language change. She briefly surveys current theories on the issue, especially concentrating on the 'child-based' theory, according to which language change is brought about at the stage of L1 acquisition by children, and the 'invisible hand' theory, which views language change as caused by converging patterns of innovation introduced by speakers seeking for successful communication. Luraghi also addresses the issue of directionality and teleology in language change, the distinction between internally and externally motivated changes, and the tenability of the uniformitarian hypothesis, which holds that language change can be explained on the basis of results from research on synchronic variation.

The structure of this book was outlined during the 18th International Conference on Historical Linguistics (ICHL), held at Montreal in 2007, where we met with most of our contributors to discuss its contents. Several other colleagues joined the team at later stages, but all of them were extremely keen on meeting our deadlines that we imposed on them, so that we were able to tell them at the following 19th ICHL (Nijmegen, 2009) that we were working on the final version of the manuscript. We acknowledge that two years is quite a short time for a wide ranging enterprise such as this, and would like to thank all contributors for tolerating our insistence on deadlines and the length of their chapters.

Our thanks are also due to our students who were involved in preparing the final version of this volume according to the specifications of the Continuum Press. Arianna Zunazzi (University of Pavia) prepared the first revision of the whole manuscript, and Karen Tucker (Memorial University) assisted us in fixing the diacritics and composing the final bibliography.

Silvia Luraghi and Vit Bubenik

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1 Historical Linguistics: History, Sources and Resources¹

Silvia Luraghi and Vit Bubenik

Chapter Overview

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1. History of Research

1.1 Relevance

In this chapter we start by introducing historical linguistics through its history. Apart from general documentary interest, one may wonder why one should know history of past theories and research when approaching this field: after all, one does not normally begin a book on phonology with a survey of past knowledge. In the field of historical linguistics, however, there are several turning points which make it imperative for the understanding of current issues to have also some knowledge about the historical development of theories which concern them. For instance, when discussing regularities and irregularities in phonological change, the way in which the notion of sound law was implemented by the neogrammarians and criticized later on remains very much an issue.

1.2 The Rise of Comparative Linguistics

The official act of birth of comparative historical linguistics is conventionally indicated in Sir William Jones' *The Sanscrit Language*, delivered as a lecture at

the Asiatic Society in 1786, in which the author remarked that the similarities between Greek, Latin and Sanskrit hinted to a common origin, adding that such languages might also be related to Persian, Gothic and the Celtic languages. While there is not much really historical in Jones' notes, it is nonetheless true that later work on historical linguistics developed out of the discovery that some languages had a common ancestor. In any case, during the first few decades of its life, comparative historical linguistics put the emphasis on the first part of its name; the main interest of early historical linguists was not on language history and language change, but rather on comparison and (some-what later) on reconstruction.

In spite of its birth within the British Empire, historical linguistics was immediately adopted in Germany, where it found its real cradle. Among early step-fathers was philosopher Friedrich Schlegel, whose 1808 book *Über die Sprache und Weisheit der Indier* ('On the speech and wisdom of the Indians') bridged the gap between his homeland's orientalists and linguists (Sanskrit had already been studied in the last decades of the eighteenth century in German universities, although the first chair was founded by Schlegel's elder brother August Wilhelm in 1818).² Schlegel correctly pointed to grammatical, rather than lexical, similarities as evidence for genetic affiliation among the Indo-European languages, including, besides the above-mentioned ones, the Slavic languages and Armenian, and added that complete divergence from the grammar of Sanskrit showed that lexical similarities with Hebrew and Coptic, as well as with Basque, must be considered an accident. According to Schlegel, Sanskrit was either the ancestor of all other Indo-European languages, or at least the closest language to the unknown ancestor, given its higher level of morphological regularity. We can thus date to Schlegel the origin of the Sanskrit-biased model of Proto-Indo-European, which has characterized (or plagued, as some would argue) Indo-European linguistics along its whole history.

The next important step in the development of comparative historical linguistics is the discovery of the first Germanic sound shift, commonly referred to today as 'Grimm's Law.' Indeed, the first scholar to describe the sound shift was Dane Rasmus Rask in his 1818 essay *Undersøgelse om det gamle nordiske eller islandske Sprogs Oprindelse* ('Introduction to the grammar of the Icelandic and other ancient northern languages'); Grimm then elaborated on Rask's findings in the second edition of his *Deutsche Grammatik* ('Germanic grammar'), published in 1822. Even though Grimm's Law represents nowadays the prototype of all sound laws, it was only later, in the second part of the nineteenth century with the work of the neogrammarians, that the concept of sound law (and hence of regularity) came to light, indeed through the explanation of putative irregularities to the first sound shift, which had remained unexplained in Grimm's work.

Although phonology remained the privileged field of research for nineteenth-century comparative historical linguistics, comparative grammar also had an

early birth, which can be dated to the publication of Franz Bopp's 1816 *Über das Konjugationssystem der Sanskritsprache in Vergleichung mit jenen der griechischen, lateinischen, persischen und germanischen Sprache* ('On the conjugation system of Sanskrit in comparison with that of Greek, Latin, Persian and Germanic'). In this work, Bopp explained his *Agglutinationstheorie*, or 'agglutination theory,' according to which bound morphemes such as verb suffixes and endings originated from earlier free morphemes, notably auxiliaries (which including the verb 'be') and personal pronouns. Today, Bopp's idea of *Agglutination* can easily be conceived of as a predecessor of grammaticalization, and consequently be taken seriously; it must be said, however, that Bopp's description of developments due to coalescence of morphemes is far from accurate. This fact, together with a general lack of interest in the reconstruction of the origins of morphology, led his theory to early discredit. Only in the second part of the twentieth century some of his hypotheses have been shown plausible, as is the general idea of the origin of bound from free morphemes.

Among Bopp's merits, one must further mention his appointment, in 1821, to the first chair of linguistics, then called *Orientalische Literatur und allgemeine Sprachkunde* ('Oriental literature and general language studies'), at the university of Berlin. This university had been founded in 1810 by another famous philosopher and linguist, Wilhelm von Humboldt, at that time Prussian minister of education. Humboldt's interest in language was manifold, and could rely on his knowledge of a wide number of languages, including many exotic ones which had never been described before. He is best known for laying the foundations of linguistic typology in his 1836 book, *Über die Verschiedenheit des menschlichen Sprachbaus und seinen Einfluss auf die geistige Entwicklung des Menschengeschlechts* ('The heterogeneity of language and its influence on the intellectual development of mankind'), originally intended as an introduction to a grammar of the Kawi language of Java. In this classical work, Humboldt classified languages based on their *innere Sprachform*, or 'internal structure,' and divided them into isolating, agglutinating and fusional.³ Humboldt's impact on the development of linguistics can hardly be overstated. As far as historical linguistics is concerned, his language typology was later incorporated by Schleicher in his model of language evolution, although it must be said that Humboldt thought that languages could not change type, since this would have meant a change in their internal structure.

In spite of his reassuring remark that any language is equally and fully representative of human spirit, Humboldt still did not fail to indicate that languages ranked differently on a value scale based on their internal structure, which he viewed as molding the mind of each 'nation' (conceived of as a cultural and linguistic, rather than political unit). As mentioned above, it was F. Schlegel's idea that the morphological structure of Sanskrit pointed to its superiority: indeed, both F. Schlegel and his brother, August Wilhelm, conceived of

languages, and consequently of their speakers, as ranking differently on a value scale. For most nineteenth-century thinkers, the fusional type represented by Sanskrit constituted the most valuable language type, its trademark being the possibility of expressing grammatical categories through vowel alternation, or apophony (as in English *sing / sang*). As Humboldt, the Schlegel brothers thought it impossible for a language to change type; they also rejected Bopp's *Agglutinationstheorie*, which predicted that fusion could rise out of agglutination.

German linguists and philosophers mentioned thus far, who were active in the first part of the nineteenth century, were deeply influenced by Romanticism. This explains their interest in the reconstruction of early stages of language, as well as in folk traditions (as well known, Jacob Grimm collected various volumes of folk tales together with his brother Wilhelm), which were viewed as building stones of national identity.

The turn of mid century brought along an array of innovations in comparative historical linguistics. One of these was the introduction, in 1853, of the family tree diagram, or *Stammbaum*, by August Schleicher, who was also the first linguist to seriously attempt a complete reconstruction of Proto-Indo-European (he even wrote a famous tale in Proto-Indo-European, *The Sheep and the Horses*, which enjoyed several revivals in the twentieth century, including a laryngealistic and a glottalic one). Such a reconstruction called for greater accuracy in the description of sound change, thus opening the way to the work of the neogrammarians. Schleicher was an amateur botanist, and his *Stammbaumtheorie* is often regarded as an attempt to introduce the methods of biology into linguistics.⁴ Indeed, Schleicher also read and commented on Charles Darwin's *Origin of Species* and supported an evolutionary view of language development.

Based on Humboldt's typology, Schleicher argued that Proto-Indo-European was the endpoint of a process in which the final fusional language type had been preceded by an isolating, then by an agglutinative stage. In other words, Schleicher rejected the idea that languages could not change type; moreover, he also thought that Sanskrit was not the common ancestor of all other Indo-European languages, even though his Proto-Indo-European still looked remarkably similar to Sanskrit. Schleicher still saw an increasing scale of value in the evolution that led from the isolating to the fusional stage of Proto-Indo-European and Sanskrit. To his mind, later stages, attested to in the documented history of the Indo-European languages, which partly shifted away from the perfect fusional type, represented an ongoing process of decay. In addition, Schleicher saw language as an organism independent of its speakers, with a life and development of its own, which followed the laws of nature.

The language as an organism metaphor was deeply entrenched in mid nineteenth-century linguistic thought. Even Schleicher's greatest critic, Max Müller, wrote that linguistics must be considered a natural science, and use the method of natural sciences, rather than adopt a historical perspective, as for

the study of other human institutions. To his mind, language was not the product of the activity of speakers, but a product of nature, and as such had not a history, but rather a growth.⁵

1.3 The Neogrammarians and Their Critics

Thus far, comparative historical linguistics looks very much like an all-German story. However, in the second half of the nineteenth century, contribution by scholars from other countries grew more and more relevant. Among the most influential non-German linguists of the time is American William Dwight Whitney, professor of Sanskrit and later of comparative philology at Yale University, and author of an important grammar of Sanskrit. Besides his interest in language description, Whitney also wrote several works on language change, the most renowned of which is *The Life and Growth of Language: An Outline of Linguistic Science*, published in 1875. In this book and in preceding work, Whitney contrasted Schleicher's (and Müller's) view of language, which he rather conceived of as a historical product, connected with the activity of speakers.

A milestone in the development of historical linguistics is constituted by Karl Verner's 1876 paper *Eine Ausnahme der ersten Lautverschiebung* ('An exception of the first sound shift'), which explained a set of irregularities to Grimm's Law, commonly known today as Verner's Law. This article opened the road to August Leskien's formulation of the doctrine according to which phonetic laws have no exceptions, the main *credo* of the Leipzig-based group of scholars known as 'neogrammarians' (German *Junggrammatiker*). Since another group of exceptions to Grimm's Law had already been explained in 1863 by Hermann Grassmann, who formulated what is known as Grassmann's Law, the neogrammarians got the impression that sound laws were exceptionless, similar to physical laws, which made linguistics look more scientific than before.

With the description of new sound laws, Proto-Indo-European started to look increasingly different from Sanskrit. A major change was the reconstruction of the vowel system when linguists realized that the /a/ vowel which was predominant in Sanskrit resulted from merger of /e/, /o/, and /a/. A far-reaching contribution to this issue came in 1878, when Swiss linguist Ferdinand de Saussure, later known as the founder of general synchronic linguistics, published his *Mémoire sur le système primitif des voyelles dans les langues indo-européennes* ('Thesis on the primitive vowel system in Indo-European languages'), in which he laid the foundations of the laryngeal theory, since then a major topic of discussion in the field of Indo-European linguistics. An important fact about Saussure's version of the theory is that Anatolian, the only branch of Indo-European which preserves consonants as traces of laryngeals,⁶ was virtually

unknown at his time. Thus, his reconstruction of laryngeals is an example of purely internal reconstruction.

The most complete theoretical account of historical linguistics produced by the neogrammarians is Hermann Paul's 1880 book *Prinzipien der Sprachgeschichte* ('Principles of language history'). Indeed, this work constitutes a fuller discussion of linguistics than the title seems to imply, if considered today. We have mentioned above that Whitney rejected Schleicher's and Müller's view of language as a natural phenomenon. Within the mainstream of European theoretical linguistics, it was the neogrammarians' merit to make it clear that linguistics was not a natural, but rather a historical science, in accordance with nineteenth-century historicist conception of human and social sciences. Thus, only with the neogrammarians did historical linguistics earn the right to the first part of its name. Paul's book is rich with far-reaching implications, not only on language evolution, but on language in general, including language acquisition, which he conceived of as responsible for language change, and the true object of linguistic research, which he viewed as being the structure of the individual variety used by a native speaker.⁷

Up to what we have described thus far, historical linguistics virtually only relied on data from ancient languages. This amounts to saying that linguists were mainly using literary, fairly standardized varieties, which could not allow them to understand the reality of synchronic language variation. However, very much at the same time during which the neogrammarians were working on sound laws, pioneering field research on regional variation was being done in Germany, as well as in France, Switzerland and northern Italy. Among the first to produce field data on diatopic variation was Georg Wenker, who undertook the task of mapping spoken varieties of German in 1876. Among other results, Wenker's research showed that dialects in which the High German sound shift had taken place were not separated by a sharp border from those in which it had not taken place, but rather by a fuzzy continuum. This result challenged the idea that sound change could draw borders among varieties, which, in historical terms, had the consequence of challenging the adequacy of the family tree model.

Indeed, the family tree model had already proved problematic. A particularly complicated issue was constituted by its implication of intermediate common stages, such as Balto-Slavic or Italo-Celtic, as well as by the implication that languages did no longer have contacts with each other once they had split. Counterexamples led Johannes Schmidt to formulate his famous *Wellentheorie*, or 'wave model,' in his 1872 book *Die Verwandtschaftsverhältnisse der indogermanischen Sprachen* ('The relationships of the Indo-European languages'). According to this model, innovations spread from a center in circular waves with decreasing strength, which explained the different degree of their regularity in different languages.

Schmidt's theory proved useful for capturing data from spoken varieties and dialectal variation in the work of Hugo Schuchardt, who, in his 1885 publication *Über die Lautgesetze. Gegen die Junggrammatiker* ('On sound laws. Against the neogrammarians'), harshly criticized the idea that sound change is exceptionless, and suggested that the same type of sound change can take place at different times (or never take place) independently in different words, a theory later known as 'lexical diffusion.' Schuchardt's broad interests in language variation and language contact brought him to extend his research outside its original field of Romance linguistics to embrace also non-Indo-European languages such as Basque (in this field a notable precursor had been Wilhelm von Humboldt) as well as to the birth and development of creoles.

Toward the end of the nineteenth century, Indo-European linguistics broadened its field to syntax. A milestone in this respect is the publication in 1892 of Jacob Wackernagel's article *Über ein Gesetz der indogermanischen Wortstellung* ('On a law regarding Indo-European word order'), in which Wackernagel pointed to the existence of second position clitics in the ancient Indo-European languages. The turn of the twentieth century saw the completion of Karl Brugmann's monumental *Grundriss der vergleichenden Grammatik der indogermanischen Sprachen* ('Outline of the comparative grammar of the Indo-European languages') by Berthold Delbrück, who contributed three volumes on syntax (Brugmann's five volumes on phonology and morphology appeared between 1886 and 1893).

Various levels of language are involved in Antoine Meillet's definition of 'grammaticalization,' a term he used for the first time in a paper of 1912. Meillet observed that frequently used free forms, such as auxiliaries, tend to lose freedom in word order, undergo semantic bleaching and phonological reduction, to such an extent as to become bound morphemes. Meillet's paper, which, without overt reference revived in part Bopp's *Agglutinationstheorie*, had a major follow-up only more than half a century later. In spite of the delay, research on grammaticalization is now a major field within historical linguistics.

Throughout the nineteenth century, the linguists' nationality played a major role in the choice of languages to be studied. Indeed, Sanskrit became popular in western Europe because the British Empire extended to India. More generally, the fact that all linguists were speakers of Indo-European languages generated the Indo-European bias that dominates historical linguistics up to the present. In addition, interest in exotic languages could hardly lead to historical studies, due to lack of written records. In spite of this, it must be mentioned that the comparative method for demonstrating language relatedness was first employed, a few years before Sir Williams Jones' lecture, in the field of Uralic languages by Hungarian Jesuit János Sajnovics, who published in 1770 his *Demonstratio Idioma Ungarorum et Lapponum idem esse* ('Proof that the Hungarian and the Lapp languages are same'). Sajnovics based his argument mostly on

comparison of bound morphemes, and reached relevant results, even though, as often happens to precursors, most credits for starting Uralic linguistics went to another Hungarian, Sámuel Gyarmathi, who was active a couple of decades later.

Yet another language family was available to western scholars, which could be studied in the same time depth of Indo-European, i.e., Hamito-Semitic.⁸ Indeed, the study of Near Eastern languages flourished during the nineteenth century, especially after the discovery of the Rosetta Stone by Napoleon's troops in 1799, which led to the decipherment of Egyptian writing. In the following decades, decipherment of cuneiform allowed linguists to gain a better insight into the ancient Semitic languages. That the Semitic languages could be related with some other languages of northern Africa was first suggested by Theodor Benfey in 1844 (he indicated Cushitic and Berber as genetically related to Semitic), while the term 'Hamito-Semitic,' which also included Egyptian, appears in Friedrich Müller's 1876 *Grundriss der Sprachwissenschaft* ('Fundamentals of Linguistics'). On the example of Brugmann's and Delbrück's *Grundriss*, a comparative grammar of Semitic languages (*Grundriss der vergleichenden Grammatik der semitischen Sprachen*, 'Outline of the comparative grammar of the Semitic languages') appeared in 1908–13, written by Carl Brockelmann. Especially in the field of language reconstruction, one must also mention Carl Meinhof's work on Bantu languages, with the publication of his 1906 *Grundzüge einer vergleichenden Grammatik der Bantusprachen* ('Principles of the comparative grammar of the Bantu languages'), and Leonrad Bloomfield's paper *The sound system of Central Algonquian*, which appeared in *Language* 1926, and used the comparative method for the reconstruction of another language family.

1.4 Historical Linguistics in the Twentieth Century and Beyond

The first two decades of the twentieth century saw the growth of Linguistic Atlases in many European countries. At the same time, American linguistics inaugurated its tradition of anthropologically oriented interdisciplinary research, with growing interest for the languages of native Americans. It was the pioneering work of anthropologist Franz Boas, who collected data on a large number of native American languages during the last decades of the nineteenth century, which stimulated interest of linguists in a new perspective. Boas, who started out as a geographer, became acquainted with the Inuit language during an expedition to Baffin island in 1883. He moved to the United States from native Germany five years later, and got increasingly interested in the native populations of North America. His research on native languages culminated with the publication of his *Handbook of American Indian Languages* in 1911.

For obvious reasons, field research on native American languages could hardly profit of a historical orientation, as did at least in part research on language variation in Europe (although Bloomfield's work on the reconstruction of Proto-Algonquian cannot be forgotten; see Chapter 2 in this volume). American structuralists had all been involved in research on native varieties, but most of them did not develop their own theoretical stance on language change, with the notable exception of Edward Sapir, one of Boas' students at Columbia University. In his book *Language*, published in 1921, Sapir elaborates on the notion of 'drift.' After pointing to the synchronic variability of language, Sapir also remarks that the norm tends to level out variation, and wonders how such a dialectic relation can allow for language change. Drift is his answer to this question. In his words, 'Language moves down time in a current of its own making. It has a drift. If there were no breaking up of a language into dialects, if each language continued as a firm, self-contained unity, it would still be constantly moving away from any assignable norm' (1921: 150). Drift captures the idea of directionality in language change, but it is not limited to it: indeed, the idea of drift as indicated in the above quotation is much more far-reaching. The fact that drift, in Sapir's thought, could mold language change even if there were no synchronic variation implies a distinction, albeit not explicitly stated, between system and usage: as if variation were not a constitutive feature of language, but rather a supplementary one, the real nature of language being that of an abstract system (cf. Croft 2000: 4 and Chapter 20 in this volume).

Sapir's faith in drift, and his previous discussion of the relation between norm and variation point toward the by then well-established issue of system vs. usage. Impossibility to account for both was indicated for the first time by Ferdinand de Saussure, whose 1916 book *Cours de linguistique générale* ('Course in general linguistics'), consisting of class notes by his students and published posthumously, laid the foundations of general linguistics, intended as the synchronic study of language as a system (and as such not allowing for variation). In Saussure's thought synchrony and diachrony were also contrasting notions, which could not be accounted for in a unified view of language as a system. In a way, Sapir incorporated the notion of system into diachrony, thus anticipating later tendencies of European structuralism.

Synchronic orientation did indeed dominate theoretical linguistics in the first part of the twentieth century, especially in the United States, with Bloomfield and later with Generative Grammar. This does not mean that historical linguistics did not progress. In the first place, linguistic data regarding the Indo-European languages were dramatically enlarged by the decipherment of Hittite by Czech Bedřich Hrozný in 1916. Hittite is the earliest attested Indo-European language; some of its peculiar features were able to seriously challenge for the first time the Sanskrit-based traditional reconstruction of Proto-Indo-European.

Discrepancies between Hittite and the other Indo-European languages led American linguist Edgar Sturtevant to formulate in 1926 his Indo-Hittite hypothesis, which viewed Hittite (and Anatolian in general) as having split away from Proto-Indo-European at a much earlier time than the remaining languages.

Especially in Europe, historical linguistics profited from the influence of dialectology. Work by leading scholars such as Wilhelm Meyer-Lübke and especially Jules-Louis Gilliéron developed in the direction of linguistic geography. Working on the French Linguistic Atlas, Italian linguist Matteo Bartoli indicated in 1925 various tendencies of linguistic areas, which he summarized in a number of principles, the most important of which being that isolated areas tend to be more conservative, and that if the same feature is found in lateral areas far from each other and not in the central area, then it is the latter which presents an innovation.

European structuralists also became interested in language change. Especially French linguist André Martinet must be credited with a successful attempt to adapt Saussure's notion of language as a system to language change. Doing this, Martinet took over the legacy of the Prague School, whose leading members, such as Roman Jakobson, did not draw a sharp distinction between synchrony and diachrony in their functional consideration of language. Already during their famous presentation at the 1928 International Conference of Linguists in the Hague, members of the Prague Linguistic Circle indicated that the dichotomy between synchrony and diachrony as stated by Saussure must be left behind. Typical of the way in which structuralists conceived of language change is the notion of teleology, which is implied in the idea of language as a system in which, as Meillet put it, 'tout se tient' ('everything hangs together'). In his 1931 essay *Prinzipien der historischen Phonologie* ('Principles of historical phonology'), Jakobson stated that one must look for the final causes of language change, which, to his mind, depended on the tendency of a system to preserve its systematic nature. Martinet further speculated on the causes of phonological change. He indicated as contrasting principles the need of being understandable in communication, which implied keeping a high number of distinctions, and the tendency toward least effort, which resulted in decrease in the number of distinctions. He also elaborated the idea of economy, which he fully illustrated in his 1955 book *Economie des changements phonétiques* ('Economy of sound change').

Theoretical linguistics in the United States again turned to language change during the 1960s. The publication of Robert King's *Historical Linguistics and Generative Grammar* in 1969 followed previous research in the field, especially by Paul Kiparsky. King described language change in terms of rule addition, rule insertion and rule change (1969: 39–63), which he mainly discussed based on examples of phonological change. The turning point for research on syntactic

change within the framework of Generative Grammar is constituted by David Lightfoot's 1979 book *Principles of Diachronic Syntax*, opening a flourishing tradition of studies which continues today.

An important issue within such approach to historical linguistics regards the causes of language change, which generativists conceive of as crucially connected with language acquisition by new generations (see Chapter 20 in this volume).

In the same decades in which Generative Grammar was turning toward historical linguistics, language typology knew a major revival with the works of Joseph Greenberg. Especially important for following developments in historical linguistics is the publication of Greenberg's paper *Some Universals of Grammar with Particular Reference to the Order of Meaningful Elements* in 1963, in which the author sketched what has since been known as word order typology. Shortly thereafter, typology became a helpful instrument of language reconstruction. This did not only concern word order. Following a seminal paper by Roman Jakobson, *Implications of Language Universals for Linguistics* (1963) Gamkrelidze and Vjačeslav Ivanov in 1972, and, independent of them, Paul Hopper in 1973, propounded what has since been known as the 'glottalic theory,' a new reconstruction of the Indo-European obstruents system.⁹ Bernard Comrie synthesized the main characteristics of the typological and universalist approach based on a wide range of languages in his monograph *Language Universals and Linguistic Typology* in 1981. At the same time the controversy regarding the status of universals arose. In the generative approach (such as Lightfoot 1979) all universals were taken to be part of the human biological endowment, hardwired in the brain of the infantile language learner, while, on the other hand, the functionalist approach emphasized the main role of language fulfilling its discourse and communicative functions. Research on language variation, which had been mainly pursued by dialectologists, became a major field of research in American linguistics in the 1970s. Sociolinguists directed their attention to social, or diastratic, rather than diatopic variation. Field research on this topic soon made it clear that synchronic variation had intimate connections with diachronic change, as argued by William Labov in his 1972 *Sociolinguistic Patterns*. Also important for the understanding of language change are recent developments in the study of language creoles. This recent tradition, which has its roots in the pioneering work of Hugo Schuchardt, demonstrates the importance of adult language acquisition for language change.

In the meantime, research on language change including historical syntax further developed from the tradition of Indo-European studies, and took advantage over the decades of insights coming from language typology and studies of language variation. A significant contribution to the establishment of a general framework for the investigation of syntactic change was the monograph *Historical Syntax in Cross-Linguistic Perspective* (1995) by Alice C. Harris and Lyle

Cambell who moved the field closer to explicating the range and nature of causes of syntactic change (reanalysis, extension, and language contact and syntactic borrowing) combining historical linguistics with recent advances in linguistic typology. In 1973 the series of International Conferences on Historical Linguistics began, which bring together biennially leading scholars in the field. Much of their scholarship can be found in the following chapters of this book.

2. Sources

Historical research requires some time depth; consequently, it mainly focuses on language families which rely on a long documented time span. Among the world's languages, those that are documented for longer than two thousand years are Indo-European, Afro-Asiatic and Sino-Tibetan. A number of other language families, such as Uralic, Altaic, Caucasian, Dravidian, Austronesian and Japanese are documented to different extents starting from the first half of the first millennium CE; most language families, however, are known only from data from the second millennium CE. Ancient documentation also includes a number of extinct languages, such as Sumerian (third–second millennium BCE) or Etruscan (first millennium BCE), both isolate, which have been in contact with some Indo-European and Afro-Asiatic languages.

When no direct sources are available, some insight into an otherwise unknown language may still be gained through indirect sources. They include evidence from borrowing, onomastics, toponomastics, words quoted in texts written in other languages. For example, the Celtic languages spoken in continental Europe are poorly documented in antiquity, via inscriptions (in several varieties: Gaulish, Celtiberian; some come even from the Balkans), but we can form some more ideas about them on the basis of anthroponyms and toponyms found in texts by Roman authors.

2.1 Types of Source and Types of Writing Support

For original sources to have been able to survive for centuries or millennia, the type of support must obviously be long lasting. Such are epigraphic sources, available for many early attested languages. Other relatively stable types of support are clay or metal artifacts, seals, shells or bones. The earliest Chinese texts are written almost exclusively on such supports: the earliest stages of Old Chinese are documented by the so-called oracle bones as well as by inscriptions on bronze.

The type of support also has implications on the type and the length of the recorded texts. Indeed, some of the extant epigraphic texts are long and contain treaties or poetry, but by the most part inscriptions are short, often similar to

each other, as e.g. in the case of tomb inscriptions, and formulaic, as in the case of oracle texts, while seals most often contain little more than personal names.

A popular support in the Ancient Near East and eastern Mediterranean is constituted by clay tablets. When baked, clay tablets become virtually as long lasting as stone. Among languages preserved by clay tablets are some belonging to the Semitic family, such as Akkadian, Ugaritic and Eblaitic, the Anatolian languages (Indo-European), as well a number of non-Indo-European languages of Anatolia, such as Hattic and Hurrian, other language isolate such as Sumerian, all written in cuneiform script. In the area of Mesopotamia and Anatolia, this type of support is typical of the millennia BCE. Clay tablets served as support for a big variety of texts, some of them comparatively long; obviously, not all cuneiform languages are equally well attested: political as well as religious or cultural matters play an important role in determining a language's likelihood of being recorded and the extent of the documentation.

Not all populations which made use of clay tablets also baked them. The earliest extant Greek texts, the Mycenaean tablets which date back to the twelfth century BCE (in Crete the Knossos tablets date back to the fourteenth/thirteenth century) were baked accidentally in the fires that destroyed the archives: normally, they were not baked because they were not intended for long term archivization. Since they mostly contained information regarding goods and expenditures as well as lists of workers belonging to the palaces, such tablets were intended for preservation only during the current budget period. This also implies that, with few exceptions, texts recorded in this way are by the most part quite similar to each other. Indeed, our knowledge of Mycenaean Greek is impaired by lexical repetition (as well as by the peculiarities of its syllabographic writing system) and complex syntactic constructions are virtually unavailable.

The exceptional environmental conditions of the Nile Valley allowed preservation of Egyptian and later Coptic, as well as Aramaic, Greek and Latin texts written on papyri. The latest papyri are written in Arabic, after the expansion of the Arabs to northern Africa. The number of Egyptian papyri, mainly found in tombs, is enormous and covers the long time span from the third millennium BCE to the first millennium CE. Papyri in other languages span from the fourth century BCE to the seventh century CE. Greek and Latin non-literary papyri document spoken varieties, while literary ones have often supplemented texts known from the written tradition.

Apart from texts on bone or bronze, Old Chinese was written on perishable supports, such as bamboo, wood strips or silk. Chinese were also the first to use paper (in the modern sense) as a support for writing, in the second century CE, while in the West parchment replaced papyrus starting from the second century BCE, and remained the most common support throughout the Middle Ages.

2.2 Written Tradition

Sources which do not date back to the actual age in which they were written and are preserved in later copies may have been copied when the language was still spoken, or when it no longer was. As remarked above, Near Eastern languages written in cuneiform, such as Akkadian or Hittite, are documented by a large quantity of clay tablets; such tablets were kept in archives, and, because they were being used for practical purposes (as in the case of law codes or rituals), they were often copied. This activity lasted for several centuries, during which the languages underwent changes. Consequently, besides possible scribal errors due to the copying process, the language was sometimes (but not always and not consistently) updated, which makes it difficult to gauge the age of the specific variants.

On the contrary, the Egyptian documentation, albeit consisting of texts which were also often copied, does not present clear traces of linguistic updating. During the Late Egyptian period, Middle Egyptian texts were still being copied in the language in which they had originally been written, which by then had become the literary language, and as such was written until the fourth century CE (while the Middle Egyptian period ends in 1300 BCE). Some interference from the spoken language occurs in texts composed in Middle Egyptian during the Late Egyptian period, but updating in copies of texts composed during the Middle Egyptian period was not a common practice.

In the case of languages such as Greek and Latin, as well known, most literary texts were copied during the Middle Ages by copyists who, generally speaking, had a relatively good knowledge of the languages, although they were no longer spoken. Before the beginning of type setting in the fifteenth century CE, Latin and Greek literary texts were copied by monks; available codices date to different periods and are variably preserved. Similar to Greek and Latin, Old Chinese texts are also mostly known through written tradition.

Different copying practices imply a great deal of philological problems. Especially in the case of Greek and Latin, the well-established tradition of classical philology makes it possible for linguists to be able to work with texts that are reasonably reliable, even though it must be said that it would be preferable if historical linguists working with a specific language had at least a good understanding of possible textual problems. For the cuneiform literature, philological issues are more complex, largely because there is no such long tradition of philological work; in some cases, most notably in the case of Hittite and the other Anatolian languages, texts are still emerging today from excavations, thus adding to the complexities of philological work.

Mesoamerican documentation is also available, especially in form of inscriptions. The Mayas and some other pre-Columbian people also used folding

books made of bark paper coated with lime; most of them have unfortunately been destroyed by the European invaders.

2.3 Oral Tradition

In non-literate societies, texts may have an oral tradition, in which case they tend to preserve older linguistic features, in some cases even a language that is no longer spoken. The best-studied case of oral tradition is constituted by the Homeric poems. The Homeric poems were written down in the course of the eighth century BCE, but they preserve features of the Greek language which was spoken two or three centuries earlier. Early stages of Indo-Aryan (Vedic) and Iranian (Avestan) were also preserved by oral tradition and are reflected in texts which were written down for the first time several centuries later.

In very much the same way as in written tradition, in oral tradition texts may undergo linguistic updating, or forms that are no longer understood may be changed; consequently, an oral text most often preserves a stratification of linguistic features. Oral composition has its own special features, most notably a highly formulaic character, which makes it valuable for historical linguistics, since formulas often preserve different linguistic stages.¹⁰ Poetic language in oral societies may have a long tradition, as shown by Calvert Watkins, who applied the comparative method to the reconstruction of the Indo-European poetic formulas (Watkins 1995).

In the case of the Homeric poems and the Vedic hymns, oral tradition was followed by a long written tradition, with the addition of all sorts of philological problems. In addition, when such texts were written down editors necessarily had to choose among variants and add their own interpretation. Thus, issues connected with the use of oral compositions for historical linguistics are manifold. Written recording of oral tradition can also give us some insight in earlier stages of non-Indo-European languages which do not have a written tradition prior to the second half of the second millennium CE, such as the languages in Africa. In Mesoamerica, the Mayan and Epi-Olmec hieroglyphic writings were used for recording calendrical events and events at the royal court. Most likely, Maya kings had real libraries of bark paper books, which were either destroyed after the conquest or did not survive the climate. The few extant ones contain almanacs and calendars, while earlier sources on stone or on small artifacts also record history, and contain lists of kings with their deeds (see Sharer and Traxler 2006 for further details). After the Spaniards had conquered their speakers in the late fifteenth–early sixteenth century, many Mesoamerican languages started a new written tradition which allowed recording a wealth of oral tradition (as in the case of Nahuatl or Quiché).

2.4 Spoken, Written and Literary Language

Since voice recording only has a century's history, historical linguistics heavily relies on written records. Transcription of spoken language by dialectologists also started late, in the last few decades of the nineteenth century.

Written sources may record various linguistic registers, sometimes close to the spoken language: this is the case of graffiti written by uncultured speakers, or personal letters, such as a number of non-literary Greek and Latin papyri from northern Egypt. The extent to which such texts may be available depends on the degree of literacy of a speakers' community: in societies in which writing was a highly specialized capacity limited to a small number of professional scribes, the likelihood of non-standard registers to ever have been recorded is smaller. This does not depend on the small number of possible writers, but rather on the highly sophisticated nature of the written register in such societies, since the written medium often made it impossible to use any other variety.

Spoken language may also be recorded within literary texts, as in the case of drama in the Indian tradition, in which women and low-class characters speak some of the Prākritis, rather than Sanskrit.

Most often, however, written texts preserve some sort of highly standardized language, which makes it difficult to capture any sort of variation. Even in such cases, the distance between written records and the language which was actually spoken at the time may vary considerably. As an example, one can consider Latin. Latin literature started in the third century BCE; until the age of Augustus, although highly standardized, the literary language was presumably not too far from the spoken language. Later, distance between the two registers increased. Changes in the spoken language can be seen in a number of non-literary texts, which constitute the source of so-called Vulgar Latin. Among them, the translations of the New Testament are of particular importance, because they also attest of language contact (notably with Greek and the Semitic languages), typical of the first centuries CE.

During the Middle Ages, Latin was used as the only written language until almost the end of the first millennium CE. The first text written in a Romance language (a small number of lines in the Strasbourg Oaths) dates to 842. The language is clearly no longer (Vulgar) Latin, but rather (an ancestor of) Old French: but the intermediate stages are not documented. Besides, in spite of the wealth of documentation on Latin, and the relatively sizable (if compared with other languages) corpus of Vulgar Latin texts, some features found in all Romance languages are nowhere attested in any variety of Latin. The best-known example is the future tense. Based on the Romance evidence, one is forced to reconstruct a periphrastic future with the auxiliary 'have' in Vulgar Latin, which is not attested as such. On the other hand, no traces remain in the Romance languages either of the Latin future in *-b-* or of the future with special

thematic vowel. Thus, the evidence from the Romance languages would not allow for the reconstruction of the Latin future, in spite of a relatively short break in the written sources recording the spoken language.¹¹

In the Middle Ages and beyond, Latin became a 'classical language,' i.e., a language no longer spoken by native speakers, but still written and even spoken in special situations (e.g., in the church or in court). The same had happened in Egypt with Middle Egyptian, with Greek, Sanskrit and many other literary languages. Ostler (2005: 49) calls Sumerian the first classical language, since its documentation apparently starts more than a thousand years after its death as a spoken language.

The relation between a classical language and spoken varieties may be of different types. Medieval Latin, though highly standardized and different from Vulgar Latin, displays interference from various spoken languages, and arguably also had regional variants, as argued in Norberg (1968). After the Renaissance, increasing consciousness of the special status of Latin, as well as better knowledge of classical authors, contributed to establish a new tradition, based on writers of the age of Caesar and Augustus, and interference from spoken languages disappeared. Clearly, the usage of a classical language as only literary language seriously hinders any knowledge of spoken varieties, such as Romance varieties during the early ages.

Sometimes, written languages emerge from translation in previously illiterate communities. A notable example is constituted by the translations of the Bible, which constitute the first written sources for several languages, such as Old Church Slavic and Gothic. Given the religious nature of this text, interference from the source to the target language is expectedly high, but its extent can hardly be gauged in cases where no earlier independent sources are available. Thus, in the case of Gothic, which is documented only through the translation of the Bible and eight fragments of a commentary on John's Gospel (the *Skeireins*), opinions vary: according to some scholars, the Gothic Bible is nothing more than an interlinear translation of the Greek original, while others hold it as totally idiomatic. Obviously, such extreme positions both lie on assumptions that cannot be proved due to the limited extent of the evidence.

2.5 Diatopic Variation

Another important issue raised by literary languages is the basic lack of diatopic, or regional variation. One can again take Latin as an example: during the whole time span covered by literary sources, one has the impression that the language was identical throughout the wide territory in which Latin was spoken. This is obviously impossible, but literary sources do by no means allow the reconstruction of any regional variant.

A different situation is documented for Ancient Greek. Contrary to the Romans, who had a political unitary organization with a strong center, the Greeks were politically divided into the *póleis*, or 'city states.' Political fragmentation favored linguistic diversity: every town used the local vernacular for inscriptions; in addition, a number of regional varieties reached the status of literary languages. Such literary dialects preserve vernacular features only in part, and are different from varieties attested to in inscriptions. Thus, regional features mix up with social and stylistic factors, yielding a picture of linguistic variation which is quite unique among ancient languages.

Contrast between Latin and Greek shows that political factors may have far-reaching implications on language recording. This is obviously even more true in cases where a language substitutes another. Thus, languages of Australia or North America have not been recorded or studied for centuries after their speakers were conquered by Europeans, and are presently endangered, largely on account of their low prestige, which is partly connected with the fact that they never reached the status of written languages.

2.6 Language Contact

As already noted in section 2.4, written sources mostly record literary varieties and leave little space for the understanding of social variation. It goes without saying that more concentrated quest for the social correlates or causes of language change based on the literary and inscriptional corpora of Ancient and Medieval languages cannot yield the same results as contemporary sociolinguistic studies dealing with 'shallow' time depth of spoken languages (see Chapter 19 in this volume). Various observations on the classical sociolinguistic issues such as language/dialect contact, bilingualism, multilingualism, code switching, diglossia, bidialectalism, koineization, etc. are found in numerous historical studies, but one can say that these subjects are underexploited. While the data of poorly documented languages are not suitable for this type of study, the large Ancient and Medieval corpora of many Indo-European, Afro-Asiatic, Sino-Tibetan, Altaic and Ugro-Finnic languages give us this opportunity.

The explication of the nature of the Greek-Hebrew and Greek-Aramaic language contact belongs to some of the most fundamental issues of biblical exegesis. There is enormous theological, philological and linguistic literature on Hebrew interference in the Old Testament, and Hebrew and Aramaic interference in the New Testament ranging from the overall assessments of the 'quality' of the Hellenistic koine used in these documents to the study of various structural Semitisms in the use of tense/aspect, pronominal clitics and word order (Beyer 1968, Black 1954, Fitzmyer 1997, Horsley 1989, Janse 2001, Maloney 1981 and many others).

The rich Hellenistic inscriptional corpus allows us to make significant observations on the diatopic and diachronic spread of the Attic-Ionic koine, the nature of dialect leveling and the rise of supradialectal formations in various dialectal regions of Ancient Greece. For instance, Bubenik (1989a) examined the gradual ‘contamination’ of Classical dialects by the Hellenistic koine (third BCE–third CE) leading ultimately to their demise (as far as our written records go) and the range of regional and social variation in Hellenistic Greece captured by regional terms Southeast Aegean Doric koine, Northwest Doric koine and Sicilian koine in the writings of dialectologists. Furthermore, the contrastive study of linguistic variation found in a variety of ‘public’ vs. ‘private’ inscriptions added to our deeper understanding of the mechanisms of linguistic innovations in general. Adams et al. (2002) demonstrated how the study of bilingual Greek-Latin inscriptions can throw light on a variety of fundamental sociolinguistic issues such as accommodation, interference, the projection of one’s identity and the intended readership.

The Middle Indo-Aryan inscriptional corpus (cf. Salomon 1998) lags behind the Hellenistic and Latin corpora in its diatopic and diachronic coverage but one has at one’s disposal literary Prakrits based on regional dialects leveled to stylized literary koines. These were used by the Buddhist (Pāli, ‘Hybrid’ Sanskrit) and Jain writers (Māhārāṣṭrī, Ardha-Māgadhī). Here the third ‘vertical’ dimension which has to be constantly taken into account in their sociolinguistic evaluation is the influence from Sanskrit, the ‘high’ variety, observable especially on the level of syntax in most literary genres. Vice versa, during the late MIA period one observes an increasing influence from Apabhraṃśa, the ‘low’ variety, in Prākṛit and Sanskrit writings. As mentioned above, this variation was exploited by the authors of Sanskrit drama (most notably by Kālidāsa during the Gupta period of the fourth–fifth CE). In it Sanskrit is spoken by the king and his ministers, Śaurasenī by women (and the clown), and Māgadhī by people of a low social status. Māhārāṣṭrī, based on the living tongue of the northwestern part of the Deccan is not used in Sanskrit plays, and for Śaurasenī, deemed to be the Prākṛit of Madhyadeśa, we have no inscriptional evidence outside Sanskrit drama.

The lack of space prevents us to make any comments on the sociolinguistically oriented studies based on literary Medieval and Early Modern corpora whose size surpasses many times that of the Ancient corpora mentioned above.

3. Writing Systems

3.1 Origins and Development of Writing

The ability to handle primary documents in many languages written in various writing systems is one of the fundamental ‘philological’ skills in historical and

comparative linguistics. The development of writing systems has been outlined in various introductory textbooks and thoroughly described in encyclopedic monographs (Gelb 1963, Daniels Bright 1996). In what follows we only want to present a succinct description of their origin and a short history of their development leading toward the currently used logosyllabic (Chinese), syllabic (Japanese), alphasyllabic (Indic), abjad (Hebrew, Arabic) and fully alphabetic systems (Greek, Cyrillic and Roman). Most scholars currently subscribe to the polygeny of writing, with at least three different geographic areas: Mesopotamia (including Egypt and Elam), China and Meso-America. It could be that India should be added to this list, pending further progress on the Indus Valley records (dated about 2400 BCE).

3.2 Ancient Near Eastern Writing Systems

The appearance of the earliest documents of literacy coincides with the development of the earliest city states in Mesopotamia when the need to keep the track of various economic transactions became necessary. Thus the earliest documents of literacy are also documents of numeracy featuring a number of various tokens for numerical units combined with pictograms for counted objects (most often animals). This primitive code was expanded by the principle of semantic transference whereby the pictograms of concrete objects started being used for abstract concepts (sometimes called ideography). For instance in Sumerian writing the pictogram of the 'sun' was also used for the 'day', and the 'star' was also used for the 'heaven' (by metonymic transfer) and 'God.' On the phonetic side of the graphic symbol further progress was achieved through phonetic transference and the so-called rebus principle. In Sumerian, given the homophony of the words for 'arrow' (TI) and 'life' (TI), it became possible to use the stylized pictogram of an 'arrow' for the abstract concept 'life.' (A well-known parallel in English is to point toward one's 'eye' when expressing the indexical notion 'I'). The rebus principle expanded this code to parts of words and became thus an important means for writing names. For instance, in Babylonian the name of the sea-monster Tiamat was spelled by two logograms TI and AMAT (TI was now taken as a syllabogram and AMAT was still recognizably the pictogram of the word *amtu* 'female slave' in the construct state). (An English parallel would be to spell the word 'belief' by two pictograms of the insect 'bee' and 'leaf'.) Babylonians and Assyrians adopted the Sumerian cuneiform system of writing keeping the old Sumerian logograms but also used them as syllabograms (VC, CV and CVC) with the phonetic values of their own Semitic language:

(1) Sumerian logogram	Akkadian syllabogram
UM(U) 'mother'	um
AN 'god'	an

AGA 'make'	ak, ag, aq
KA 'mouth'	ka
NAG 'drink'	nak, nag, naq

At this point we can mention the syllab(ograph)ic writing system used for Mycenaean Greek, so-called Linear B script, used on clay tablets in Crete (Knossos, Chania) and mainland Greece (Pylos, Mycenae, Tiryns, Thebes) between the fourteenth and twelfth century. This script consisted of about 90 syllabic symbols solely of the CV structure (and about a 100 commodity signs used with numerals). Five vowels were distinguished (*da, de, di, do, du; ka, ke, ki, ko, ku;* etc.); consonant clusters were spelled by using two signs, each with the vowel of the following syllable; final consonants were usually omitted; and liquids, nasals and *s* were usually omitted at the end of the syllable:

(2) LB syllab(ograph)ic script

ti-ri-po-de	/tripode/	=	τρίποδε 'two tripods'
tu-ka-te	/thugatēr/	=	θυγάτηρ 'daughter'
pa-te	/pantes/	=	πάντες 'all'
pa-ka-na	/phasgana/	=	φάσγανα 'swords'

The final step toward the phoneticization of the writing system was the acrophonic principle whereby the former pictograms were used with complete disregard for their original semantics. Its first examples are found in the Sinaitic inscriptions (seventeenth BCE) and they led to the creation of the phonetic Egyptian alphabet consisting of 25 consonantal phonograms. While the Egyptians never abandoned their logographic hieroglyphic system and used the phonetic (syllabographic) alphabet above all for writing proper names, the West Semites started using the phonographic consonantal system consistently. The less-known Ugaritic alphabet (fourteenth century) is based on cuneiform symbols; the Phoenician alphabet (eleventh century) is based on pictograms. Thus the pictogram of 'bull's head' became the phonogram of the glottal stop [ʔ] because the first sound in the word for 'bull' in Phoenician was [ʔ]; similarly, the pictogram of 'house' became the phonogram of [b] because the first sound in the word for 'house' in Phoenician was [b]; etc. To write the theonym Baʕal 'Baal' it sufficed to write BʕL (the phonogram ʕ was based on the pictogram of an 'eye,' *ʕayn* in Phoenician, and L was based on the pictogram of 'the rod of the teacher' (prob.)). The Arabic term *abjad* has nowadays been adopted in the meaning of a syllab(ograph)ic system which does not indicate vowels.

3.3 East and South Asian Writing Systems

In China the early writing arose in the second half of the second millennium BCE (during the Shang or Yin dynasty in North-Central China). It comes in the form

of inscribed ox scapulas and turtle plastrons recording royal divination performed at the Shang court (hence the label 'oracle bone inscriptions'). The contemporary Chinese logograms are directly descended from the Shang characters. Some of them are recognizable as pictograms, e.g. the logogram for 'moon, month' is a picture of a crescent moon; the logogram for 'woman' is a stylized picture of a kneeling woman; etc. As in Mesopotamia and Egypt the effectiveness of the logographic system was increased by the rebus principle. For instance, the logogram for 'king' (*wáng*) was also used to write the verb *wǎng* 'go forward' which happened to be pronounced only with a different tone (this procedure is based on phonetic transfer). The other way around, the same logogram could be used for two phonetically different but semantically related words resulting in the polyphonic use of a graph. For instance, the word *míng* 'call out' could also be written with the logogram for the word *kǒu* 'mouth' resulting in the polyphony of the latter logogram (this procedure leading to graphic multivalence is based on semantic transfer).

Chinese logograms were codified at the end of the first century CE in Xǔ Shèn's *Shuō wén jiě zì* 'Explanation of simple and compound graphs' (containing 9,353 characters). Their number went up during the following centuries to ca. 60 000 in the recent dictionary of single graphs published between 1986 and 1990. Given the open-endedness of the lexicon the number of sinograms has to grow. Nevertheless, the derivational process of compounding limits the number of basic characters; thus the number of basic sinograms in daily use is much smaller than their total number found in classical literature. Mair (1996: 200) provides interesting statistics based on a variety of reading materials: 1,000 sinograms account for about 90 percent of all occurrences and 2,400 cover 99 percent (6,600 cover 99.999 percent). The range for most individuals is approximately between 2,000–2,500 characters. Given the typological equation word=morpheme=syllable it is possible to describe the Modern Chinese writing system as a large (but phonetically imprecise) syllabary with 'pictographic' (and 'ideographic') component inherited from Early Chinese writing still very much present in certain domains.

Japanese is written in a mixture of three scripts: a logo/morphographic script (*kanji*) and two syllabaries (*hiragana* and *katakana*). Kanji characters were introduced from China by way of Korea (around the third century CE). As is the case of sinograms the same character may be polyphonic with *on*-readings (based on the pronunciation in Chinese) and *kun*-readings representing a Japanese morpheme. For instance, the logogram for 'person' (*rén* in Mandarin) can be read *jin* or *nin* (*on*-readings) or *hito* (*kun*-reading). The same type of polyphony obtained in Akkadian where the sumerogram for 'man' could be read *lu* (Sumerian) or *awêlum* 'man' (Babylonian). In Japanese kanji characters are used to represent primary lexical categories (nouns, verbs, adjectives and some adverbs). The two syllabaries (derived during the ninth century from

kanji) are phonographic representing (C)V and CyV combinations (*ka, ki, ku, ke, ko; kya, kyū, kyo; ga, gi, . . .*). Contemporary hiragana ('kana without angles') is used to write grammatical elements (inflectional affixes on nouns, adjectives, verbs and particles). Katakana is used to write foreign names and loanwords, and also some onomatopoeic words. The order of letters in modern dictionaries is based on Indic scripts: first vowels (*a, i, u, e, o*) then plosives followed by sonorants (*y-, r-, w-*).

Hankul, the native Korean script, is a phonemically based alphabet possessing the distinction of being one of the 'most scientifically designed and efficient scripts in the world' (King 1996: 219). It was invented by the King Seycong in the fifteenth century as a result of linguistically informed planning. Among the numerous theories of the origin of its letter shapes, that based on a graphic representation of the speech organs involved in the articulation (of velar *k*, alveolar *n*, dental *s*, bilabial *m* and glottal *-ng*) is most convincing.

Indic scripts can be described as alphasyllabary in which each-consonant vowel sequence is written as a unit (called *akṣara* 'syllable' in Sanskrit) and the vowel symbol functions as a diacritic to the consonant. Daniels and Bright (1996: 4) labeled this type of an intermediate system between the syllabary and a full alphabet by an Ethiopian word *abuḡida* (based on the first four consonants and the first four vowels of the Geez system). *Devanāgarī* ('a divine Nagari') is the best-known Indic script used for Sanskrit (books printed in modern times), Hindi, Nepali and Marathi. It derives from the Brahmi script of the Ashokan inscriptions (the middle of the third century BCE). Brahmi script was exported to other parts of Asia and became the source of all the domestic scripts of India, Southeast Asian scripts (Burmese, Thai, Lao, Khmer) and Tibetan. There are two theories of its origin: the Semitic theory sees a Semitic prototype (Phoenician or Aramaic) in about half of its characters, while the indigenous theory pinpoints the similarities with the Indus Valley script. However, it should be mentioned that the Aramaic origin of a somewhat older Kharoṣṭhī script (developed in the northwest in the fourth century BCE) is not in doubt. The traditional order of letters in Indic scripts is based on articulatory phonetics developed long time ago by the ancient pundits. After the basic vowels (*a, ā, i, ī, u, ū*), syllabic liquids (*ṛ, ḷ and ṝ*) and diphthongs (*ai > ē, au > ō, āi > ai, āu > au*) come plosives organized by their place (velar, palatal, retroflex, dental and labial) and manner of articulation (plain, aspirated), and voice; sonorants (*y, r, l*), and fricatives (*v, ś, ṣ, s, h*) are placed at the end.

3.4 Middle Eastern Writing Systems—Abjads

The oldest Hebrew script was borrowed from the Phoenicians (see section 3.1) and it survived in its original shape among the Samaritans until recent times.

The Jews adopted a square variant of the Imperial Aramaic script by the mid third century BCE (and this type of script is still in use nowadays for writing Modern Hebrew). While the Phoenician script (consisting of 22 unconnected consonants) was strictly consonantal, Hebrew and Aramaic scribes developed a way of representing long high (and later mid) vowels by means of velar and palatal glides, called *matres lectionis* ‘mothers of reading’: W for [ū] and [ō], and Y for [ī] and [ē]. For instance, *qōl* ‘voice,’ *qūm* ‘to stand,’ *tēmān* ‘south’ and *rīb* ‘to quarrel’ are spelled as follows: קוּל, קוּם, קוּמ, קוּי, קוּי. Long [ā] at the end of the word was indicated by H (glottal fricative) in the case of feminine nouns ending in *-āh* or by ʔ (glottal stop) with nouns and verbs in *-āʔ*. For instance, *malk-āh* ‘queen,’ *tāʔ* ‘chamber’ and *bāʔ* ‘he entered’ are spelled as follows: מלכה, תא, באʔ.

The Tiberiad system for marking short vowels (invented ca. 800 CE in Tiberias) is used in printed biblical texts. It represents 12 vowels by means of sublinear and infralinear points and strokes in combination with the earlier system of marking long vowels by glides and there is a special symbol for long (rounded) [ā̄].

Cursive developments of the Aramaic abjad resulted in the Mandaic and Syriac scripts (earlier *Estrangelo* and later *Serto*). Other varieties developed for Iranian (Avestan, Pahlavi, Sogdian) and Altaic languages (transmitted from Turkic Uyghur to Mongolian to Tungusic Manchu).

The Nabatean Aramaic script is an ancestor of the North Arabic script (with earliest inscriptions dated to the fourth century CE). Arabic had more consonants than Aramaic (unlike Aramaic, Arabic preserved Proto-Semitic plain and pharyngealized interdentals) and some letters had to be used for more than one consonant. This problem was definitively solved in the seventh century CE when supra- and infralinear diacritics were introduced. This system of the Classical Arabic abjad (consisting of 28 letters) is used for Modern Standard Arabic nowadays. It is called *al-alifbāʔu* ‘the alphabet’ or more appropriately *al-hurūfu* ‘*l-abjadiyyatu* ‘the letters ʔ, B, G, D’ i.e. ‘abjad.’ Unlike in Aramaic, Syriac and Hebrew the first 4 letters of the Phoenician abjad come in the order of 1, 2, 5, 8 because of the insertion of consonantal letters marked by diacritics:

(3) (Initial portion of) Arabic abjad

ا	ب	ت	ث	ج	ح	خ	د	ذ
ʔalif	bāʔ	tāʔ	θāʔ	jīm	hāʔ	xāʔ	dāl	ḏāl
א	ב			ג			ד	
ʔalɛp	bēt			gīmɛl			dālɛt	

With the spread of Islam Arabic script has been adopted by a number of Iranian (Persian, Kurdish, Pashto), Indic (Kashmiri, Urdu, Sindhi), Altaic (Ottoman Turkish, Uyghur) and other languages (Maylay). Nowadays, it is the second most widely used script. For the sounds of these languages which did not exist

in Arabic various diacritics had to be introduced. Persian added four letters to the Arabic system. To spell palatals *č*, *ž* and the voiceless bilabial stop *p* three dots were used (چ ڙ پ) modifying Arabic *č*, *z* and *b*. The voiced velar stop was spelled with *k* with a stroke added (ڪ). To spell its retroflex consonants Urdu uses Arabic emphatic ط as a superscript over plain *t*, *d*, *n*. The Sindhi Arabo-Persian script (Khubchandani 2003: 635) consists of 29 characters of the Arabic script, 3 modified characters adopted from the Persian script and 20 additional characters to represent Sindhi retroflex, voiceless aspirates (marked by four dots), voiced aspirates and implosive phonemes (marked by two vertical dots): ف [ph], پ [bh], etc.

3.5 Full Alphabets (Greek, Roman, Cyrillic)

The names and shapes of the 20 letters of the Greek alphabet (consisting of 24 letters) can be traced back to the Phoenician abjad. The structural difference between Phoenician (Semitic) and Greek (Indo-European)—enhanced by the ‘ritual’ of reciting the sequence of the letters—brought about a transition from an abjad system consisting of consonants only to a fully alphabetic system which had distinct symbols for both the consonants and the vowels. Unlike Phoenician, Greek does not possess the glottal stop /ʔ/, the voiceless pharyngeal fricative /ħ/ and the voiced pharyngeal fricative /ʕ/ (letters number 1, 8 and 16 in the Phoenician and Hebrew alphabets) in its phonological system. In their recitation based on the acrophonic principle Greeks heard the next sound, i.e. [a], [e] and [o], respectively, and they started using them as the vowel letters. (A propos [o], it should be observed the phoneme /a/ is realized as a rounded allophone [â] after the voiced pharyngeal fricative in /ʕayin/ > [ʕâyin].) The fifth letter in the Phoenician alphabet representing the glottal fricative /ħ/ was adopted as a vowel /e/ (most likely the particular Ionic borrower was ‘h’-less), and the eighth letter could be used as a long /ē/, hence E [e] vs. H [ē] (in minuscules ε vs. η). The letters representing the high vowels, [i] and [u], derived from symbols for the palatal and velar glide, [y] and [w], but these could be used to represent long vowels, [ī] and [ū], already in Semitic. Phoenician *wāw*, letter number 6, was borrowed in two values. As a letter F for the velar glide which existed as a phoneme in Ionic (e.g., ξέϊνος ‘stranger’ goes back to ξέϊνφος, cf. Mycenaean ke-se-nu-wo) and as a letter Y for the high back vowel [u] added at the end of the alphabet after T. The former letter F [w], called erroneously στίγμα, was actually a double Y [u]. The addition of the letter Ω for long [ō] parallels the situation with front mid vowels: E [e] and H [ē] vs. O [o] and Ω [ō]. In consonants Phoenician *tēt* (letter number 9), representing the voiceless pharyngealized stop [tʰ], was adopted in the value of a voiceless dental aspirate Θ [th], and two more letters had to be added for the Greek aspirates: Φ [ph] and

Χ [kh]. The penultimate letter in the Greek alphabet is Ψ expressing the sequence [ps]. Its velar counterpart Ξ [ks] is found in the slot of the Phoenician *sāmek* (letter number 15) and it will be observed that Greek has no counterpart to the Phoenician voiceless pharyngealized sibilant, *šādē* (letter number 18). The following letter, the Phoenician voiceless pharyngealized [q], *qōp*, was used only as *κόππα* in the numerical value of '90.'

The Latin alphabet derives from the Greek alphabet by way of Etruscan. The Etruscan alphabet can be traced back to a western Greek alphabet, more specifically to the variant used by the Euboeans who settled in Italy in Cumae and Pithekoussai. The Etruscan influence can be seen most noticeably in the letter gamma, Γ or curved C, used for the voiceless [k] since Etruscan did not possess the contrast of voice in plosives. In the third century BCE a new G was added by modifying the existing C with a stroke. Currently, Latin based scripts are used for the majority of the world's languages. Various diacritics had to be invented to satisfy the needs of Romance, Germanic, Baltic, Slavic, Uralic, Turkish and most of the African and American Indian languages. In some countries the phenomenon of digraphia or even polygraphia arose as a consequence of adopting the Latin script for other earlier scripts (e.g., Albanian used to be written in Greek, Cyrillic and Arabic scripts).

The Cyrillic alphabet, used currently for Russian, Serbian and Bulgarian, is viewed as a modification of the glagolitic alphabet by means of the substitution of the Greek capital letters. The glagolitic alphabet in its turn is claimed to be an invention of Constantine (Cyril). There are some similarities between certain glagolitic letters (for *g, d, l, f*) and their Greek minuscule counterparts but they do not amount to more than 'stimuli for the creative imagination of Constantine' (Schmalstieg, 1976: 6). In both alphabets the letters for /š/ and /c/ recall the Hebrew letters: compare Cyrillic III and LJ with Hebrew ש and צ. A number of letters had to be added for the sounds which did not exist in Greek; most importantly, the so-called yers Ъ and Ы for the front and back reduced vowels. The combination of the hard yer with iota produced [ы] and the ѣ [je], ю [ju] and я [ja] (its current version), and four more letters were added for nasalized vowels Ѧ [ĕ̃], ѧ [jĕ̃], Ѩ [ō̃] and ѩ [jō̃].

4. Corpora

Within the limits of space we list (without trying to be exhaustive) literary and inscriptional corpora available for Afro-Asiatic, Indo-European, Altaic, Korean and Japanese, Sino-Tibetan, several American Indian and some Bantu languages. We also list principal journals which published many ancient and medieval texts and selected sites that provide links to electronic corpora.

4.1 Egyptian Hieroglyphic Corpus

Generally available collections of hieroglyphic texts are scarce. The following two are the most available:

de Buck, Adrian. 1963. *Egyptian Reading Book*, 2nd ed. (Leiden)

Sethe, Kurt. 1959. *Ägyptische Lesestücke*, 3rd ed. (Hildesheim)

Journals:

Zeitschrift für Ägyptische Sprache und Altertumskunde

Journal of Egyptian Archeology

The web site of the Oriental institute of the University of Chicago:

www-oi.uchicago.edu/OI/DEPT/RA/ABZU/ABZU.HTML

The Chicago Demotic Dictionary online:

<http://oi.uchicago.edu/research/pubs/catalog/cdd/>

The International Association of Egyptologists:

<http://www.fak12.uni-muenchen.de/aegyp/IAEPage.html>

A site maintained at Cambridge University:

www.newton.cam.ac.uk/egypt/index.html

4.2 Akkadian and Sumerian Cuneiform Corpus

Akkadian (Babylonian and Assyrian) cuneiform tablets are published in specialized series edited by European (London, Paris, Berlin), American (Philadelphia, Yale, Chicago) and other museums (St. Petersburg, Istanbul, Baghdad):

CT *Cuneiform Texts* (British Museum)

VS *Vorderasiatische Schriftdenkmäler* (Berlin)

TCL *Textes Cunéiformes* (Musée du Louvre)

YOS *Yale Oriental Series* (Yale)

UM *The Museum Publications of the Babylonian Section* (University of Pennsylvania)

TIM *Texts in the Iraq Museum* (Baghdad)

Many texts have also been published in several Assyriological journals:

- JCS *Journal of Cuneiform Studies*
- ZA *Zeitschrift für Assyriologie und vorderasiatische Archäologie*
- RA *Revue d'Assyriologie et d'Archéologie orientale*

Electronic Text Corpus of Sumerian Literature: www-etcs1.orient.ox.ac.uk

Akkadian Cuneiform Texts: www.etana.org/etact

4.3 Hebrew and Aramaic Literary and Inscriptional Corpora

- BH *Biblia hebraica* (R. Kittel, 3rd ed. A. Alt and O. Eissfeldt, 1937)
- KAI *Kanaanäische und aramäische Inschriften* (H. Donner & W. Röllig, 1966)
- AP *Aramaic Papyri of the Fifth Century B.C.* (A. Cowley, 1923)
- BT *The Babylonian Talmud* (J. Epstein, London, 1935–52) 35 volumes.
- TB *The Talmud of Babylonia* (J. Neusner, Chicago/Atlanta, 1984–)

Bibliography for Old Testament Studies: sites.google.com/site/biblicalstudies-resources/Home

Bible and Mishnah: <http://www.mechon-mamre.org/>

The Dead Sea Scrolls Project: <http://oi.uchicago.edu/research/projects/scr/>

Dead Sea Scrolls Biblical Manuscripts: applelinks.com/index.php/print/17982

Judaica electronic texts: www.library.upenn.edu/cajs/etexts.html

4.4 Classical Arabic Literary and Inscriptional Corpora

Arabic literary corpus is vast; there are numerous bilingual editions published in the West. The names of individual authors with the description of their work are available in several histories of the Arabic literature:

Brockelmann, C. 1898–1902. *Geschichte der arabischen Literatur*. Weimar.

Nicholson, R. A. 1923. *A Literary History of the Arabs*. London.

There is a useful chrestomathy from prosaic texts:

Brünnow, R. E. und A. Fleischer. 1960. *Arabische Chrestomathie aus Prosaschriftstellern*, seventh ed. Leipzig.

Conti Rossini, C. 1936. *Chrestomathia Arabica meridionalis epigraphica*. Roma.

Quran on line and searchable data base: http://www.holyebooks.org/islam/the_holy_quran/index.html

4.5 Berber Inscriptional and Literary Corpora

Textes berbères, Collections 'Bilingues' (Harry Stroomer, Édisud)

Recueil des inscriptions libyques (J.-B. Chabot, Paris, 1940)

Online Libyco-Berber inscription database: <http://lbi-project.org/>

4.6 Hittite Cuneiform Corpora

Hethitisches Keilschriftlesebuch (J. Friedrich, Heidelberg, 1961)—for beginners

KBo *Keilschrifttexte aus Bogazköy* (Lepzig, 1916–23. Berlin, 1954–)

KUB *Keilschrifturkunden aus Bogazköy* (Berlin, 1921–)

RHA *Revue Hittite et Asiatique*

Hittite Texts (seventeenth century–twelfth century): www.utexas.edu/cola/centers/lrc/eieol/hitol-O-X-html

The Chicago Hittite Dictionary online: <http://ochre.lib.uchicago.edu/eCHD/>

4.7 Sanskrit and Prakrit Literary and Inscriptional Corpora

Given the size of the Sanskrit literary corpus only the most important Vedic and Brāhmaṇa works quoted in linguistic studies will be provided:

AiBr *Aitareyabrāhmaṇa* (Malaviya)

AV *Atharvaveda* (Vishvabandhu et al.)

Bh *Mahābhāṣya* (Abhyankar)

GBr *Gopathabrāhmaṇa* (Vijayapāla)

Kāś *Kāśikāvṛtti* (Sharm et al.)

Mah *Mahābhārata* (Bhandarkar Oriental Research Institute)

http://www.sub.uni-goettingen.de/ebene_1/fiindolo/gretil/1_sanskr/2_epic/mbh/sas/mahabharata.htm

(in devanagari) <http://www.sacred-texts.com/hin/mbs/index.htm>

Rām *Rāmāyaṇa* (Bhatt et al.) <http://www.sacred-texts.com/hin/rama/index.htm>

RV *Ṛgveda* (Sontakke et al.)

ŚBr *Śatapathabrāhmaṇa* (Weber)

TAr *Taittirīyārāṇyaka* (Abhyankar and Joshi)

Vedas on line: <http://www.sacred-texts.com/hin/index.htm#vedas>

Monnier William's dictionary on line: <http://students.washington.edu/prem/mw/>

A Pali Reader (D. Anderson, Copenhagen, 1935)

Handbuch des Pali (M. Mayrhofer, Heidelberg, 1951)

Pali canon: <http://pali.pratyeka.org/#Canon-etexts>

A Middle Indo-Aryan Reader (S. K. Chatterji & S. Sen, Calcutta, 1957)

The vast inscriptional corpus is published in *Epigraphia Indica* and there are many catalogues:

Catalogue of Sanskrit & Prakrit Manuscripts (Jesalmer Collection):

www.jainlibrary.org/menus_cate.php

Prakrit and Apabhramṣa Manuscripts at the Lalbhai Dalpatbhai Institute of Indology, Ahmedabad:

asiarooms.com/travel-guide/india/ahmedabad/museum.htm

Göttingen Register of Electronic Texts in Sanskrit, Pali, Prakrit, and New Indo-Aryan languages:

[web.uflib.ufl.edu/cm/religion/Buddhism, Hinduism, Taoism.htm](http://web.uflib.ufl.edu/cm/religion/Buddhism,Hinduism,Taoism.htm)

Hindi electronic text corpora:

www.uio.no/studier/emner/hf/ikos/HIN4010/index.xml

4.8 Old Persian Cuneiform Corpora

OP *Old Persian* (R. G. Kent, New Haven, 1954)

Old Persian Cuneiform Corpus: www.u.arizona.edu/~tabaker/op

Achaemenid Royal Inscriptions: www.livius.org/aa-ac/achaemenians/inscriptions.html

4.9 Avestan Literary Corpora

Avestisches Elementarbuch (H. Reichelt, Heidelberg, 1909/1978)

Die Gathas des Zarathustra (H. Humbach, Heidelberg, 1959)

The Avestan Hymn to Mithra (I. Gerschevitch, Cambridge, 1959)

<http://www.avesta.org/>

4.10 Classical Greek Literary and Inscriptional Corpora

The vast Classical Greek literary corpus is available in the following editions:

The Loeb Classical Library (Cambridge, Massachusetts/London)—with English translation

Clarendon Press (Oxford)

Bibliotheca Teubneriana (Leipzig)

Reclam (Stuttgart)—with German translation

An electronic library with annotated texts of most Classical Greek authors:
<http://www.perseus.tufts.edu/hopper/collection?collection=Perseus:collection:Greco-Roman>

Inscriptional corpora:

- CIG *Corpus Inscriptionum Graecarum* (Berlin, 1828–77) 4 volumes.
CIJ *Corpus inscriptionum Judaicarum* (J. B. Frey, 1936–52)
DI *Sammlung der griechischen Dialekt-Inschriften* (H. Collitz & F. Bechtel, 1884–1915)
IC *Inscriptiones Creticae* (M. Guarducci, 1935–50) 4 volumes.
IG *Inscriptiones Graecae* (Berlin, 1873–)
SEG *Supplementum Epigraphicum Graecum* (1923–)
- Sylloge *Sylloge Inscriptionum Graecarum* (W. Dittenberger, 1915–24)
Corpus of Mycenaean inscriptions from Knossos: www.librarything.com/author/chadwickjohn
Old and New Testament:
NT *Novum Testamentum Graece et Latine* (E. Nestle, 1921)
OT or LXX *Septuaginta* (A. Rahlfs, 1935)

Papyri:

- P. Eleph. *Elephantine-Papyri* (O. Rubensohn, 1907)
P. Flor. *Papiri fiorentini* (D. Comparetti et al., 1906–15) 3 volumes
PGM *Papyri Graecae magicae* (K. Preisendanz & A. Henrichs, 1973)
P. Oxy. *The Oxyrhynchus Papyri* (B. P. Grenfell, A. S. Hunt et al., 1898–) 61 volumes.
- Oxyrhynchus Papyri Project at Oxford*: www.papyrology.ox.ac.uk
Greek and Latin papyri: <http://www.payrusportal.de/>

Patristic texts:

- PG J. P. Migne (ed.), *Patrologiae cursus completus*, series Graeca (1857–66) 161 volumes.

4.11 Latin Literary and Inscriptional Corpora

- Literary corpus (same as for Greek 4.3)
Recueil de textes latins archaïques (A. Ernout, Paris, 1957)
Corpus Scriptorum Latinorum: www.forumromanum.org/literature/index.html

An electronic library with annotated texts of most Latin authors:
[http://www.perseus.tufts.edu/hopper/collection?collection=Perseus:
collection:Greco-Roman](http://www.perseus.tufts.edu/hopper/collection?collection=Perseus:collection:Greco-Roman)

Inscriptional corpus:

CIL *Corpus Inscriptionum Latinarum* (Berlin, 1863–1909)
en.wikipedia.org/wiki/Corpus_Inscriptionum_Latinarum
CIL (searchable): <http://cil.bbaw.de/dateien/datenbank.php>
Altlateinische Inschriften (E. Diehl, Berlin, 1930)

Patristic texts:

PL J. P. Migne (ed.), *Patrologiae cursus completus*, series Latina (1844–65) 221 volumes.

Various resources on classical languages:

[http://rzblx10.uni-regensburg.de/dbinfo/dbliste.php?bib_id=subgo&colors=
15&ocolors=40&lett=f&gebiete=9](http://rzblx10.uni-regensburg.de/dbinfo/dbliste.php?bib_id=subgo&colors=15&ocolors=40&lett=f&gebiete=9)

4.12 Old Celtic Inscriptional and Literary Corpora

Prae-Italic Dialects of Italy (J. Whatmough, Cambridge, MA, 1933)
The Dialects of Ancient Gaul (J. Whatmough, 1950)
Old Irish Reader (R. Thurneysen, Dublin, 1949)
(Searchable) corpus of annotated texts: <http://www.ucc.ie/celt/search.html>

4.13 Old Germanic Literary Corpora

Die gotische Bibel (W. Streitberg, Heidelberg, 1908/1971)
Wulfila: <http://www.wulfila.be/gothic/browse/>
Althochdeutsches Lesebuch (Jeaune & Helm, Tübingen, 1958)
Altfriesisches Lesebuch (W. Heuser, Heidelberg, 1903)
Beowulf (Fr. Klaeber, Boston, 1956)
An Introduction to Old Norse (E. V. Gordon, Oxford, 1957)

4.14 Middle English Literary Corpora

The Helsinki Corpus of English Texts: khnt.hit.uib.no/icane/manuals/HC
Parsed corpora of Middle and Modern English Texts: [www.ling.upene.edu/
hist-corpora](http://www.ling.upene.edu/hist-corpora)
King James' Bible: <http://www.kingjamesbibleonline.org/>

4.15 Baltic Literary Corpora

Die altpreussischen Sprachdenkmäler (R. Trautmann, Göttingen, 1910)

Litauisches Lesebuch (A. Leskien, Heidelberg, 1919)

Handbuch der litauischen Sprache (A. Senn, Heidelberg, 1957)

Lettisches Lesebuch (J. Endzelin, Heidelberg, 1922)

Hand-selected literary corpus of Latvian texts:

www.semti-kamols.lv/doc_upl/Kamols-Kaunas-paper-2.pdf

4.16 Old Church Slavonic Literary Corpora (Only the Most Important Documents)

Ass. *Codex Assemanianus* (I. Vajs and J. Kurz, Prague, 1929–55)

Mar. *Codex Marianus* (V. Jagić, Berlin and St. Petersburg, 1883; Graz, 1960)

PsSin. *Psalterium Sinaiticum* (S. Severyanov, Petrograd, 1922; Graz, 1954)

Zog. *Codex Zographensis* (V. Jagić, Berlin, 1879; Graz, 1954)

Kirchenslavische Chrestomathie (W. Vondrak, Göttingen, 1910)

University of Helsinki parsed corpus of Old Church Slavonic texts:

www.rcf.usc.edu/~pancheva/ParsedCorpusList.html

4.17 Armenian

Altarmenisches Elementarbuch (A. Meillet, Heidelberg, 1913)

Eastern Armenian National Corpus (includes a great majority of all extant texts):

www.h-net.org/announce/show.cgi?ID=168976

4.18 Albanian

Albanesische Texte mit Glossar (H. Pedersen, Leipzig, 1895)

Lehrgang des Albanischen (M. Lambertz, Halle/Saale, 1954–59)

www.geocities.com/albaland/literature.html

4.19 Tocharian

Tocharische Sprachreste (E. Sieg & W. Siegling, Göttingen, 1953)

TITUS: Tocharian manuscripts: THT:

Titus.fkidg1.uni-frankfurt.de/texte/tocharic/tht.htm

4.20 Indo-European comparative corpora and (etymological) dictionaries online

The Proiel corpus of the Greek NT, with Latin, Gothic, Armenian and OCS translations:

<http://foni.uio.no:3000/session/new>

The PROIEL parallel corpus of old IE translations of the NT (contrastive study of the syntax of early IE languages):

<http://www.hf.uio.no/ifikk/proiel/events/georgiaworkshop.html>

Electronic resources for Indo-European:

<http://titus.uni-frankfurt.de/indexe.htm>

4.21 Altaic

University of Helsinki Language Corpus Server (Uralic, Turkic, Tungusic, Mongolian): www.ling.helsinki.fi/uhlcs/data/databank.html

Old Turkic language: Facts, Discussion Forum:

www.absoluteastronomy.com/topics/Old_Turkic_language

Project for the Electronic Corpus of Old Turkic Texts:

eswww.fas.harvard.edu/cel_publ07.html

4.22 Korean, Japanese

Electronic corpus of Korean texts:

www.Idc.upenn.edu/Catalog/CatalogEntry.jsp?catalogId=LDC2006T09

Japanese corpora and dictionary:

faculty.washington.edu/ebender/corpora/corpora.html

Japanese electronic dictionary:

corpus.linguistics.berkeley.edu/corpora.html

4.23 Sino-Tibetan

Chinese Language Corpus of Texts of the Chinese Academy:

www.usc.edu/schools/college/ealc/chinling/corpus2_old.htm

Tibetan Literary Texts and Documents from Chinese Turkestan:

readingtibetan.wordpress.com/bibliography

4.24 Native American Languages

Hewson's Proto-Algonkian Dictionary:

www.linguistics.berkeley.edu/~jblowe/REWWW/PriorArt.html

Algonkian and Iroquoian linguistics:

www-sul.stanford.edu/depts/ssrg/linguist/LinguisticsSerials.doc

4.25 Bantu Languages

Bantu languages encyclopedia topics:

www.reference.com/browse/Bantu

Web resources for Bantu languages:

www.africanlanguages.org/bantus.html

Kiswahili (Swahili):

africanlanguages.com/kiswahili

Notes

1. The chapter was written jointly by the coauthors: however, sections 1 and 2 are mainly due to the work of Silvia Luraghi, while sections 3 and 4 are mainly due to the work of Vit Bubenik. We wish to thank Pierluigi Cuzzolin, John Hewson, Brian Joseph and Federica Venier for helpful comments and suggestions on the content and style of earlier versions of this chapter.
2. Although others before Jones referred to source languages that were no longer available, that is another key point in his famous statement. See Campbell (2003: 87–89) for a critical appraisal of Jones' contribution to the birth of comparative linguistics. See further Campbell and Poser (2008) about how to determine language relationship, and the new *Journal of Language Relationship*, entirely devoted to the issue.
3. We use the term 'fusional' rather than 'flective' (but see Andersen in this volume) or 'inflectional,' since the agglutinative languages do in fact also have inflection.
4. But it could have been inspired by the structure of the stemma codicum, see Morpurgo Davies (1998).
5. Schleicher's and Müller's positions in this regard are discussed in Keller (1994: 46–53).
6. The first scholar to indicate that Hittite preserved traces of laryngeals was Jerzy Kuryłowicz in 1927. As is well known, traces of laryngeals are also preserved in the other languages, in the various vowel effects (lengthening, etc.) they trigger.
7. Various passages by Paul on these issues are discussed in Weinreich, et al. (1968).
8. The name Hamito-Semitic is no longer used, and has been replaced by Afro-Asiatic or Afrasian (which, it must be said, does not exactly coincide with it); we use it here because it mirrors language classification at the time of which we are speaking.
9. See Gamkrelidze and Ivanov (1972) and (1973), and Hopper (1973).
10. See Lord (2000) and Ong (1982) among others.
11. Other sources that might be worth mentioning are scientific (or quasi-scientific) grammars of earlier stages where several relatively long grammatical traditions were

in existence, for instance in India (Sanskrit and Tamil), Arabia, among the Greeks and Romans and the Hebraic tradition. Admittedly these works are not aimed at describing change. There are also lay observations (as in Plato's *Cratylus*) that if properly interpreted give some insights.

Part I

METHODOLOGY

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2 Sound Change and the Comparative Method: The Science of Historical Reconstruction

John Hewson

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1. Introduction

This chapter concentrates on the phenomenon of the regularity of sound change, and its continuing relevance to the discipline of historical and comparative linguistics. Comparative reconstruction, as a scientific procedure, is necessarily based on the regularity of sound change: reconstructions are only acceptable if they are coherently based on documented sound changes, which give coherent correspondences in cognate words from different languages.¹

In the teaching of Comparative Linguistics the question of why sound change is regular is seldom examined; it is simply taken for granted. But such a universal phenomenon cannot possibly be accidental, and the answer to the question is not difficult to find. It lies in the fact that the phonology of a language or a dialect is not an atomistic list of vowels and consonants, as sometimes presented in linguistic descriptions, but a closed coherent system with subsystems in which every item has its unique place. A phonological system is, as pointed out long ago by Meillet (1903/1939: 475), 'un système où tout se tient et a un plan d'une merveilleuse rigueur' (a system where everything fits together with a remarkably rigorous coherence). Meillet was not speaking just of phonology, and there are many other equally coherent systems in every language, so that a language, in and by itself, is a coherent system of closed contrasts, of which the phonological system is perhaps the most obvious, as may be seen in the way that vowel systems are normally presented in grids and patterns in which each vowel has its own systemic value, determined by its position in the system, a position which is in its turn determined by the internal contrasts within the system.

Any change in a system automatically produces systematic results: change the p on a typewriter to f and *fif* will be produced when one types *pip*, reminding us that French *pipe* and Italian *pipa* are cognates of English *fife*. It is systemic change, change in the phonological system that automatically produces regular sound change in the discourse of the speakers and writers of the language.

2. System in Language

The notion of system in language, although clearly presented in Saussure (1916), was neither clearly followed or even clearly understood in twentieth-century linguistics. The Bloomfieldian attempt to find system in the directly observable morphology,² for example, was totally misguided, and consequently a total failure. The tense system of English, for example, does not lie in the morphology, which has considerable irregularities for a variety of historical reasons,³ but in the meaning represented by the morphology, the binary contrast between the representation of time that is memorial, coeval with the memory (Past), and time that is not coeval with the memory (Non-Past).

In Saussure's game of chess, the system does not lie in the chess pieces, but in the moves that each piece makes; the systems of a language lie not in the observable morphosyntax, but in what is marked by the morphosyntax. The Bloomfieldians were trying to find system in the chess pieces, and in the process, ignoring the game of chess. All pawns look alike, of course, but the important fact is that all pawns move alike. And if a pawn is lost it can be replaced

with any object of a suitable size: irregularity is permissible in the markers, without affecting the operations of the system.

3. Regularity of Sound Change in the Languages of the World

The early comparativists were Europeans, rigorously trained, in the tradition of the nineteenth-century European educational system, in the study of Latin and Greek. To this was added, at the university level, the study of Sanskrit, once its relevance had been realized, and the notion of a protolanguage, a theoretical earlier language from which all the daughter languages were descended, was established. As a result the study of Comparative Grammar and Comparative Philology was in origin a European phenomenon, closely related to the study of the languages of the Indo-European phylum. As a result the study of Comparative and Historical Linguistics became identified with Indo-European, and little thought was given to the application of this kind of analysis to other language families and phyla.

The European voyages of discovery had led to the discovery of Indo-European languages in the Indian sub-continent, but the voyages to the New World had encountered totally different language families on the eastern seaboard of North America. The Algonkian⁴ family, languages of which are found from the Atlantic to the Rockies, and from the Arctic to the southern United States, was the most widespread and diverse of the four linguistic groupings (Inuktitut in the far north, Algonkian and Iroquoian further south, and the Muskogean languages of the southern United States.) encountered by the Europeans at the time of the earliest contacts in North America. The Algonkian family has some of the oldest documentation and some of the earliest comparative studies. The 400-year history of Algonkian studies is consequently the most complete model for the kind of work that has been done or is being done or can be done with other Amerindian groupings, from all parts of the American continent.

Since the languages of the Algonkian and Iroquoian families were those of the eastern seaboard, the Great Lakes and the St. Lawrence River system, these were the first language families to be encountered by the Europeans from early contact onwards. Inuktitut, encountered on the most northerly coast of the eastern seaboard, had but recently spread across the Arctic from the West, and had consequently but little dialectal variation.

The earliest explorers and missionaries recognized that Algonkian languages were related, even if no longer mutually comprehensible, and that the Iroquoian languages were similarly members of a closely related family. Roger Williams (1603–1683), in his description of the Algonkian language that he had learned in

New England (1643) mentions, in fact, a regular sound shift: that the word for 'dog' was pronounced regionally in four different ways: anùm, ayím, arùm, alùm. As Mary Haas comments (1967: 817): 'Eliot (1666) makes a similar observation, except for *y*, when he states: "We Massachusetts pronounce the *n*. The *Nipmuck* Indians pronounce *l*. And the *Northern* Indians pronounce *R*.'"'

The American scholar John Pickering (1777–1846) in his notes to Sébastien Rasles' (1657–1724) *Dictionary to the Abenaki Language* (1833, ms. from 1690s) quotes the above information from both Williams and John Eliot (1604–1690), but does not understand the nature of these correspondences, since this is too soon after the publication of Jacob Grimm's 'Deutsche Grammatik,' the 1822 edition of Volume I of which gave 'an exact statement of how the sounds of the various dialects corresponded to one another' (Pedersen 1962: 38), and provided a first introduction to the technology of comparative linguistics.

Peter Stephen Duponceau's (1760–1844) *Mémoire sur le système grammatical des langues de quelques nations indiennes de l'Amérique du Nord* (1838) although it contained an appendix of the comparative vocabulary of Algonkian and Iroquoian languages to show that the two families were completely unrelated, and another comprising a comparative survey of the vocabulary of 30 Algonkian languages, had likewise no insight into the nature of the sound correspondences.

With the push of new immigrants westward in the late nineteenth century, more and more languages and language families were encountered and documented, so that by the end of the century an important first attempt at classification of North American Indian languages had been made by John Wesley Powell (1834–1902) for the newly founded Bureau of American Ethnology in Washington, DC. Powell (1891) recognized 58 distinct families, which were later reduced to 55, and eventually reduced to 6 major stocks in a bold and sweeping classification prepared for the *Encyclopedia Britannica* in 1929 by Edward Sapir.

4. Sapir and Michelson

Sapir (1884–1939) had already created a stir in 1913 by suggesting that Wiyot and Yurok (known collectively as Ritwan), two languages of California, geographically distant from the normal Algonkian domain of prairies and East, were related to the Algonkian family. This was roundly rejected by Truman Michelson (1879–1938) who, a year earlier, had himself made a classification of Algonkian languages, based on considerable personal field work (1912).

Michelson had noted the sound shift mentioned by Williams and Eliot (without reference to them), but although he had done his apprenticeship in comparative linguistics in Germany, he made no more sense of the data than did Duponceau or Pickering. Sapir in his 1913 article was the first to perceive the nature of this sound shift, which was relevant to his demonstration of the

relatedness of Wiyot and Yurok to Algonkian. He noted Michelson's failure to see the systemic regularities in the data (1913: 640–641):

Michelson seems to assume that Algonki[a]n originally possessed only *n*, and that, under undefined circumstances, it developed into *l* in several dialects. Inasmuch as *l* occurs in all positions [...] as distinct from *n*; and as Cheyenne seems to have *t* or its palatalized reflex *ts*, not *n*, where Eastern dialects have *l*, . . . I prefer to believe that original Algonki[a]n had both *l* and *n* and that these sounds were leveled to *n* in several Central dialects.

Here we have the first proper understanding of the comparative method and its application to the data of the Algonkian family. Michelson obviously took umbrage, and poured scorn on Sapir's proposal, claiming that it was based on no more than chance resemblances (Michelson 1914).

Although some scholars went on record in support of Sapir's proposal (Dixon and Kroeber 1919, Radin 1919), the result of Michelson's intervention was that for 50 years the phylum relationship (as it turns out to be) between Algonkian, on the one hand, and Ritwan (the supposed family of which the only known exponents are Wiyot and Yurok) on the other, was considered controversial, with scholars unwilling to make a categorical judgment for or against the proposal.

It was left to Mary Haas (1910–1996), who had been one of Sapir's own doctoral students, to demonstrate the validity of Sapir's proposal. She used the trailblazing comparative work of Bloomfield (1925, 1946), and the field work of Robins (1958) and Teeter (1964), to show (Haas 1960, 1966) that Sapir had been right in his proposal that Wiyot and Yurok are related to Algonkian, but that it is a phylum, not a family relationship.

5. Bloomfield's 1925 Reconstruction

In the very first edition of *Language* (1925), the journal of the newly founded Linguistic Society of America, Bloomfield made a major breakthrough in Amerindian linguistics by applying the comparative method in detail to the study of Algonkian languages, showing the correspondences of four central languages, which he hoped would be 'a basis for further discussion' (1925: 130). He added, in a solitary but now famous footnote on the same page:

I hope, also, to help dispose of the notion that the usual processes of linguistic change are suspended on the American continent (Meillet and Cohen, *Les langues du monde*, Paris 1924, p.9). If there exists anywhere a language in which these processes do not occur (sound-change

independent of meaning, analogic change, etc.), then they will not explain the history of Indo-European or of any other language. A principle such as the regularity of phonetic change is not a part of the specific tradition handed on to each new speaker of a given language, but is either a universal trait of human speech or nothing at all, an error.

This is clearly a manifesto, and it was supported by Bloomfield's devastatingly punctilious demonstration of the regularity of sound change in Algonkian languages: in the polysyllabic words of his examples every single segmental phoneme was a regular correspondence to the phonemes in the cognate words, and a regular reflex of the phonemes in the reconstructions. It was a resounding answer to Meillet's comment (Meillet and Cohen 1924: 9):

... one may well ask whether the languages of America (which are for the most part poorly known and insufficiently studied from a comparative point of view) will ever lend themselves to exact, exhausting comparative treatment; the samples offered so far hold scant promise ... (trans. JH)

The most interesting feature of the P(roto)-A(lgonkian) sound system is the variety of consonant clusters. There are three main sets: pre-aspirated, pre-glottalized, and pre-nasalized, and clusters of other minor groupings.

The following sets of correspondences show the reflexes for pre-glottalized and pre-aspirated */θ / and */t/.

PA	Cree	Fox	Menomini	Ojibway
*ʔθ	st	s	ʔn	ss
*ʔt	st	ht	ʔt	tt
*hθ	ht	s	hn	ss
*ht	ht	ht	ht	tt

The coherence of these sets is illustrated by the following.

(1) **Pre-glottalized */θ/**

	*pema:ʔθenwi	*neʔθwi
	<i>it is blown</i>	<i>three</i>
C	pima:stan	nisto
F	pema:senwi	neswi
M	peme:ʔnen	nεʔniw
O	pima:ssin	nisswi

Other regular changes in (1): C and O merge */e/ and */i/; C and M lose the final vowel; O also loses the preceding /w/, as do C and M after consonants

(see (2)). The /-an/ of C is a morphological variant. M has varieties of timbre and length that require special explanation (see below).

(2) **Pre-glottalized */t/**

	*a:ʔtawe:wa	*meʔtekwi	*api:ʔtamwa
	<i>bet with s.o.</i>	<i>stick</i>	<i>sit near</i>
C	astawe:w	mistik	api:stam
F	ahtawe:wa	mehtekwi	api:htamwa
M	aʔtawε:w	mεʔtek	api:ʔtam
O	attawa:n	mittik	otapi:tta:n

3ps of TA verb is different in O; *api:ʔtamwa is transitive, O using a different conjugation.

(3) **Pre-aspirated */θ /**

	*pēmohθe:wa	*tahθwi	*ešihθenwi
	<i>he walks</i>	<i>so many</i>	<i>it lies so</i>
C	pimohte:w	tahto	isihtin
F	pemose:wa	taswi	išisenwi
M	pemo:hne:w	tahni:-	ese:hnen
O	pimosse:	tasso	išissin

*/wi/ is allophonically reduced to /o/ in C and O. In C and M *š and *s merged.

(4) **Pre-aspirated */t/**

	*a:pehtawi	*ki:šihta:wa	*te:pehtawe:wa
	<i>half</i>	<i>he completes it</i>	<i>he hears him</i>
C	a:pihtaw	ki:sihta:w	te:pihtawe:w
F	a:pehtawi	ki:šihto:wa	te:pehtawe:wa
M	a:pehtaw	ke:sehtaw	tε:pehtawε:w
O	a:pitta	oki:šitto:n	ote:pittawa:n

Bloomfield describes *ki:šihta:wa as a pseudo-transitive verb (anti-passive), with morphological variants *hto:/hta: in its conjugation, an alternation which the languages levelled differently.

The greatest challenge to Bloomfield's reconstruction of the PA sound system was the variation of length and timbre in Menomoni, which proved to be somewhat of a Gordian knot to unravel. At first (1925: 131) Bloomfield reconstructed five PA timbres long and short, because of Menomoni, whereas the other languages show a maximum of four. He also comments on the 'complex but regular alternation of long and short vowels' in M. Later, in a volume dedicated to the memory of Trubetzkoy (1939), he gives a morpho-phonemic description of

M vowel length in a set of statements that, although purely descriptive, nevertheless ‘approximate the historical development from Proto-Algonquian to present day Menomini’ (1939: 105). In 1946 (see following section) he reduces the PA vowel timbres to four, short and long, from which six M timbres are derived. The final details of the phonological history of M are ultimately clarified by Hockett (1981).

6. Bloomfield’s ‘Sketch’ of 1946

During the next 20 years Bloomfield’s 1925 sketch of the sound system of PA was fleshed out by the work of other scholars (e.g. Michelson 1935 1939, Siebert 1941), so that when he came to make a fuller statement on PA phonology and morphology he was able to comment (1946: 85):

Our reconstructions are based, to begin with, on the four best-known languages: Fox, Cree, Menomini, and Ojibwa. Michelson’s brilliant [1935] study of the divergent western languages (Blackfoot, Cheyenne, and the Arapaho group) showed that these reconstructions will, in the main, fit all the languages and can accordingly be viewed as Proto-Algonquian.

This 1946 work known to Algonkianists as ‘Bloomfield’s Sketch,’ is a remarkable document, full of detailed information, and a typical example of the compressed style of Bloomfield’s late descriptive work, as in his posthumous *The Menomini Language* (1962). It is a chapter of only 45 pages. It contains 404 numbered reconstructions, and further economy is achieved by cross reference to these numbers instead of repeatedly adding examples.

There are some two dozen Algonkian languages, yet Bloomfield was able to do successful reconstructions with only four. The reason for this is that the four central languages that he chose (on three of which he did fieldwork, Fox being the exception) were all conservative, and consequently retained distinctive elements from the protolanguage. Fox, for example, retained final vowels, and reflexes of all four short vowels. Cree was essential for determining *θ and *l, both leveled to /n/ in the other three languages, and also had /sk/ as a reflex for determining *θk and *xk clusters (which as Siebert (1941) had shown then required evidence from Eastern Algonkian to distinguish *θk from *xk). Menomini retained the pre-glottalized clusters, and Ojibway the pre-nasalized clusters. This facility for reconstructing from selected conservative languages was later exploited by Hewson (1993) to carry out computerized reconstruction (see section 8 below).

7. PA Studies after Bloomfield

Much of Bloomfield's Algonkian work was left unpublished, in manuscript form, on his early death in 1949; these manuscripts were inherited by Charles Hockett, to whom we owe the publication of the Menomini grammar (1962) and dictionary (1975), and the monograph on Eastern Ojibway (1958). On the basis of Bloomfield's unpublished lexicon of Fox (drawn from the published reports of William Jones (1874–1909) and Michelson and eventually published (1994) in a critical edition by Goddard), Cree, Menomini and Ojibway, Hockett began the most important task left undone by Bloomfield: the creation of a Proto-Algonkian dictionary.

In 1957 Hockett published 404 reconstructed items in /k-/, which, he indicated, might 'be regarded as the first instalment of a Central Algonquian comparative dictionary.' Hockett reverts to Bloomfield's 1925 term 'Proto-Central-Algonquian' because he did not use the evidence of an eastern language to resolve the handful *θk/*xk clusters in the data; this could have been done, since there are several missionary dictionaries dating back to Rasles ([1691] \ 1833) which would have provided the necessary data.

In the 1950s Mary Haas was active in probing the relationship of the Algonkian family to other Amerindian groupings. Having finally put an end to the controversy over the relationship to Ritwan (see section 3 above), she proceeded to supply some comparative evidence of a relationship to the Gulf languages (1958b) and to Tonkawa (1959), and a resume (1960) in which she states a fourfold purpose: '(1) to validate the Algonkian-Ritwan connection, (2) to show that the possibility of an Algonkian-Mosan affiliation merits further investigation, (3) to show that the Gulf languages and Tonkawa are also related to Algonkian and (4) to suggest that all these languages are probably related to one another' (Haas 1960: 989).

In 1964 an important meeting was held at the National Museum of Canada in Ottawa to bring together scholars working on Algonkian languages. Among the published proceedings (1967) were two significant comparativist papers. Frank T. Siebert (1912–1998) presented reconstructions of the names of flora and fauna and demonstrated their geographical range in North America, and concluded that the Proto-Algonkian homeland was in the region of the Great Lakes (1967: 13–47). Goddard presented a reconstruction of the categories of the PA verb, based on evidence from all the major Algonkian languages (using missionary grammars when no other evidence was available). He showed for the first time that Bloomfield's reconstruction of the transitive verb morphology was based on Fox, Cree and Menomini, whereas Ojibway (where the morphological differences had been treated by Bloomfield (1946: 98–99) as a reshaping) and other languages showed clearly that F, C and M had merged two earlier paradigms (1967: 66–106).

From that meeting came a plan to hold an annual Algonkian conference, the first of which was in 1968 at Wakefield, in the Laurentians to the north of Ottawa. These have been held annually since, with publication of the *Papers* from the mid-1970s onwards. It was at this time that I was having difficulty investigating the possible relationship of Beothuk (language of the extinct Indians of Newfoundland) to Algonkian because what few PA reconstructions existed were scattered throughout the literature. It was also at this time that George Aubin and Hong Bae Lee collected these scattered items and produced (Brown University mimeo, 1968) *An Etymological Word-list of Reconstructed Proto-Algonquian*, which Aubin later expanded, completely revised and published (1975), providing an essential reference work for comparative Algonkian studies.

8. Comparative Reconstruction by Computer

Given that a protolanguage dictionary, done by traditional methods of reconstruction, can take the whole lifetime of a scholar to prepare, and given the extraordinary regularity of sound correspondences in Bloomfield's four central languages, I began to envision the possibility, in the early 1970s, of streamlining the process by doing comparative reconstruction on the computer. Through the generosity of Charles Hockett, I was able to procure copies of Bloomfield's manuscript lexicons of Cree, Fox and Menomini (all still unpublished at that point) to add to the word list in his *Eastern Ojibwa* (1958), which was then supplemented by the Ojibway word list of Piggott and Kaye (1973). Altogether some 30,000 lexical items from these four languages were put into machine readable form. With the aid of a Canada Council Research Grant we were successful in setting up a computer system to carry out comparative reconstruction. The description of how this is achieved, and the operation of the various programs in the system has been reported on in a variety of articles (Hewson 1974, 1977, 1989).

The computer strategy that was developed in this work is, in fact, so simple, that it can be stated in a simple sentence (Hewson 1993: iv): 'From the data of the daughter languages generate all possible protoforms, then sort alphabetically, and examine all sets of identical protoforms collocated by the sort.' Each line of the sort begins with the potential protoform generated automatically from the known reflexes, followed by the native word identified by language. Where words from different languages produce identical protoforms, these items are thrown together by the sort, a step which eliminates the time-consuming and sometimes frustrating dictionary search for cognates. By this technique enormous amounts of low-level reconstruction can be done.

This new dictionary (Hewson 1993) also incorporated cross-references to the numbered glosses in Aubin's (1975) PA dictionary (see 6 above) and to the

numbered glosses in Siebert (1975), 263 significant reconstructions which appeared too late to be included in Aubin's work. In this way the computerized reconstructions are correlated with all previous known reconstructions.

The end product is a protolanguage dictionary that is very different from the typical dictionaries produced in the past, which would normally be processed section by section, and produced in fascicles, with vast amounts of particular and atomistic detail. The computer-generated dictionary produces only the low-level reconstruction of what is perfectly regular; the detailed research on particular items must be added later. But it has the enormous advantage of producing several thousand words which are immediately available for comparative work inside and outside the language family, materials that would not be otherwise available.

9. The Reconstruction Engine of Mazaudon and Lowe

The early PA work was done on a mainframe, when only an ASCII alphabet in capital letters was available. In fact the publication of the PA dictionary was delayed until a suitable phonetic font was available for the printing process, so that C could be printed as š and Q as ʔ. Since then the technology has been improved to the point where Martine Mazaudon and John Lowe have now developed a Reconstruction Engine sophisticated enough to be adapted to the reconstruction of any language family. Their original article describing this advance (Mazaudon and Lowe 1991), in the *Bulletin de la Société Linguistique de Paris*, is entitled 'Du bon usage de l'informatique en linguistique historique' (On the advantageous usage of computer technology in historical linguistics), and it demonstrates that, by intelligent exploitation of a simple computer strategy (see section 8 above) computerized methods enable us to complete in a matter of months work that in the past often occupied a scholar's lifetime.

A subsequent extensive report in English (Lowe and Mazaudon 1994) in a special issue of *Computational Phonology* gives an extensive and explicit report of the programs and the problems faced in the reconstruction of lexical elements of the Tamang group of Tibeto-Burman. Four modern tones are recognized in the modern languages and two proto-tone categories are reconstructed for the proto-language.

10. Reconstruction and Typology

In the PA experimentation we were fortunate to be dealing with polysyllabic words, as exemplified in (1) to (4) above. By eliminating the vowels and using the consonant frameworks of these words, we bypassed all problems of

segmentation: the consonants and consonant clusters remaining were the segments used to generate, by means of the known reflexes, the fundamental frameworks of all the possible protoforms. This procedure also bypassed the difficulties of the vowel shifts in Menomini, and considerably simplified the programming.

The Cree word *pima:stan* 'it is blown,' e.g., was reduced to the consonant skeleton [p m st n], and the corresponding Menomini form *peme:ʔnen* to [p m ʔn n], and from such consonant skeletons all possible proto-skeletons (proto-projections) were reconstructed in a single pass. A sort of these proto-projections produces an alphabetical list which throws together all identical proto-skeletons and the different language forms from which they come, as in (5).

- | | |
|--------------|--|
| (5) p m ʔθ n | C pima:stin 'it is blown about' |
| p m ʔθ n | F pema:senwi 'it is blown over' |
| p m ʔθ n | M pemε:ʔnen 'it is blown along, past' |
| p m ʔθ n | O pima:ssin 'sail along, be carried along by wind' |

All that is left for the linguist to do is to cull from the list the cognates thrown together by this sort, with the rudimentary reconstruction, and reconstruct the vowels from the data of the original forms of the daughter languages. Each item thus becomes a separate numbered gloss in the final dictionary.

Lowe and Mazaudon show how this strategy can be adapted to a language with monosyllables and tones, vastly different typologically from Algonkian. Here a strategy had to be devised for dealing with the various possibilities of segmentation. Such technical adjustments are required for every language family: for IE, e.g., programming would need to accommodate or ignore ablaut, and probably strip inflections. In the case of Tamang it was necessary to devise a means to represent tones, and the reflexes of the tones.

It is not surprising that polysyllabic Algonkian words each generated on average over 20 protoprojections. Most of these would be singletons, and thus filtered out by the sort, which separates the gold nuggets from the tailings. Because of the complexities of segmentation, the Tamang forms also generate large numbers of proto-projections, since every possible parsing of every syllable must be examined. This fact points directly to the main challenge of the comparative method: it requires finding needles in haystacks, work for which the computer is the machine par excellence.

With systems like RE it is now feasible to do the massive amount of low-level reconstruction that needs to be done for the world's language families. The data of the new protolanguage dictionaries could then be compared to create a further, deeper stage of reconstruction: we may then compare Proto-Algonkian with Proto-Siouan and Proto-Iroquoian, e.g., (or Proto-Germanic

with Proto-Slavic,⁵ etc.). This work should produce a surer insight into pre-history than the long-range guesswork (which, although limited, has its usefulness) that goes on at the moment.

11. Conclusion

The past fifty years has seen the creation of modern dictionaries and grammars and other materials for hundreds of languages, information which had not previously been accessible to the scholarly community and the research of linguists. There is an enormous amount of comparative work to be done on the documentation of these languages, and much of the low-level work can now be done by automated methods, based on the regularity of sound change, an empirical fact that has been the foundational principle for the linguistic reconstruction of protolanguages for the better part of two centuries.

The computer work is also valuable in research on word formatives. In polysynthetic languages such as those of the Algonkian family, a dictionary of word formatives can be created by placing hyphens between the formatives in the reconstructed forms. A concordance made of all items between hyphens will display the collocations and the range of usage of each word formative, by collating all the words in which each formative element is found.

The possibilities of the computer manipulation of data in Comparative and Historical Linguistics is vast. It is important that students of the discipline be informed of the basic principles of computerized reconstruction, and be aware of the mass of low-level reconstruction that needs to be done on the newly accessible materials developed in the last half century.

Notes

1. This article makes use of much previous published work, especially Hewson (1974, 1977, 1989, 1993, 2001).
2. See, e.g., the articles in 'Language' by Bloch (1947) and Hockett (1947) and Nida's critical response to this type of analysis (1948).
3. The large number of strong verbs, the remnants of Verner's Law (*was, were*), the Saxon loss of nasals before fricatives (*bring, brought*), haplology (*send, sent*), for example.
4. This is the spelling of Sapir, justified by the fact that the older form *Algonquian* was from a French spelling, that the traditional pronunciation had always been *-kian*, and that *Esquimau* had already been standardized to *Eskimo*. Bloomfield, however, maintained the traditional spellings *Algonquin* (a dialect of Ojibway), *Algonquian* (the whole family).
5. Neither of these dictionaries exists at the moment. Both of them are eminently feasible. A preliminary version of either one of them could now be done as a Master's thesis by a knowledgeable graduate student. The PG dictionary would reveal, e.g., what is limited to West Germanic, what is Common Germanic and what is Indo-European in the Germanic vocabularies.

3 Internal Reconstruction

Brian D. Joseph

Chapter Overview

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1. Introduction to the Method

Imagine that you enter a classroom and see that the desks and chairs are all in a different place from when you last saw them—what sort of surmises might you reasonably make as to the causes of the disarray, and more particularly, what would guide you in those surmises? Many possibilities are imaginable: the movement of the furniture could be the work of aliens; it could be the result of a windstorm; it could be that the chairs staged a rebellion against the desks that had been oppressing them; or, another teacher may have rearranged the furniture in the classroom in order to offer a setting for a movie or to stage a play or simply to promote discussion in his/her class.

All of these are possible scenarios that allow for an explanation of the history behind the particular observed synchronic state of affairs encountered in the classroom. However, not all of them are equally plausible, and in fact, some of these can be ruled out rather easily. We know on independent grounds that chairs are simply not capable of holding the propositional attitudes or carrying out the actions necessary for staging a rebellion, and that visits by extra-terrestrials are highly unlikely (and if such creatures did visit, why would they pull a prank like changing around the furniture?). And, while a windstorm could wreak havoc in a room if windows were left open or were blown out, that is not a likely event, and in any case, an absence of broken glass would allow

one to eliminate that possibility. This means that the best hypothesis remaining is the one that explains the alterations as the result of human actions sometime before your entry into the classroom.

This exercise is a matter of trying to deduce the historical events that led to a synchronic state, and the reasoning was guided by our sense of what events are likely and unlikely to have created the observed synchronic state of affairs.

This type of reasoning is found in all walks of life. We see a puddle or wet pavement in the morning and can hypothesize that it rained overnight even without directly experiencing the rain. We see a friend's hair in disarray and guess that he had lost his comb. And so on. In each case we are attempting to reconstruct some aspect of the past that is not directly observable but which is inferable from the outcome and what we know about how such outcomes generally arise.

This same reconstructive method can be applied to language, so that the causal historical underpinnings to a particular configuration of facts in a language can be guessed at, or to use more scientific-sounding terminology, hypothesized about, with the most reasonable hypotheses being those that are supported by what is known about language and about language history in general (just as the most reasonable hypothesis in the classroom example did not involve aliens or animate furniture). Thus language typology (see Chapter 4 in this volume) informs this method, by giving a sense of what can be expected for a given language state. In historical linguistics, this method has a special name: internal reconstruction, so-called because it is a reconstructive technique that relies entirely on observed evidence from a single stage of a language, and thus is 'internal' in that there is no 'external' comparison to related languages (as there is in the comparative method (see Chapter 2 in this volume)). In a sense, the designation 'internal' is not completely justified, since by drawing on known properties of language and language change, considerations external to the language stage in question are brought into play; nonetheless, the method is 'internal' as far as the source of the data one works with is concerned (again, unlike comparative reconstruction).

2. The Method of Internal Reconstruction Exemplified

The classic application of this method involves drawing inferences about the historical sources of morphophonemic alternations (i.e., alternations in the phonemic shape of morphemes).

For example, the nominative singular of the Ancient Greek word for 'honey' is *méli*, and the genitive singular is *mélitos*. Other facts about Ancient Greek noun inflection, e.g., a comparison of nominative *paimēn* 'shepherd' with genitive *paiménos* 'of a shepherd' or of nominative *ōar* 'wife' with genitive *ōaros*

'of a wife,' demonstrate that the genitive singular ending is clearly *-os* with other nouns, and in particular consonant-stem nouns. The best synchronic analysis of 'honey,' therefore, segments it as *méli-Ø / mélit-os*, so that there is allomorphy in the stem between *méli-* and *mélit-*. How did such allomorphy arise? Knowing that paradigms generally start out as perfectly regular, with no allomorphy at the outset, and that languages often lose consonants at the ends of words, it is reasonable to suppose that prior to the attested Ancient Greek stage with the nominative *méli*, there was a stage in which the nominative was **melit*. The asterisk, as with comparative reconstruction, indicates that this form is hypothetical, not directly attested but inferable. Moreover, to get from this posited **melit* to the attested *méli*, a sound change of final *t*-deletion (perhaps to be viewed as a more general final stop deletion) must be posited as well. Internal reconstruction in this case thus resolves the synchronic *méli/mélit-* allomorphy into an earlier unity, with a single stem form **melit-*, and recognizes as well a sound change that gave rise to the later allomorphy.

Moreover, this account generalizes to other similar alternations in Greek, e.g. neuter present participle nominative singular *lúon* 'loosening' / genitive singular *lúont-os*, for which an earlier nominative form **luont* can be reconstructed, guided by a recognition that sound changes, such as the final stop deletion posited for *méli*, typically affect a wide range of forms. Knowledge of what can happen to sounds is thus brought to bear here on the analysis of *méli/méritos*, just as knowledge of likely forces moving furniture around was brought to bear on the reasoning in the classroom example.

As another example, consider the two words for 'sleep' in Latin: *somnus* and *sōpor* (differentiated as 'sleep' vs. 'deep sleep,' respectively). Given other nouns in *-nu-* and *-or-* in Latin (e.g., *signum* 'sign,' *lignum* 'wood,' *calor* 'heat,' *tumor* 'swelling'), a reasonable synchronic analysis would segment these nouns as *som-nu-* and *sōp-or-*, respectively, thus yielding root allomorphy in consonantism of these derivationally related forms, *som-* vs. *sōp-*. The difference in the final consonants in these forms can be resolved by noting that *som-* occurs before a nasal, and that regressive assimilation of a stop to a following nasal is common cross-linguistically. Thus, *somnus* can be internally reconstructed as **sop-nu-*, and a sound change of *p > m / __n* can be posited. As in the Greek case, this account generalizes to other alternations of a labial stop and a nasal, as with *dap-* in *dap-s* 'sacrificial meal' and its root cognate *dam-* in *dam-num* 'loss.'

This Latin case allows for a generalization in a somewhat different direction that the Greek did not. That is, there are isolated forms in Latin, words without any apparent relatives within Latin itself, that have the same *-mn-* sequence as in *somnus*. The generality implicit in the positing of a sound change turning a labial stop into *m* before an *n* means that even for a word like *amnis* 'river,' with no related forms sharing its root element and thus nothing that can give a clue that *am-* had ever been anything other than *am-*, one nonetheless can speculate

that in a prior but unattested stage of Latin, this word may have been **ap-nis*. The significance of this hypothesis becomes clear in the next section.

Morphophonemic alternations offer a direct basis for the historical inferences that we call internal reconstruction, but as the case with *ammis* shows, certain configurations of facts allow for internal reconstruction even when there are no overt clues in the form of alternations. Sometimes, gaps in patterns are enough to allow for internally derived historical hypotheses. For instance, Old Irish has a stop system with voiced stops *b d g* and voiceless stops *t k*, thus with a gap at the labial point for the voiceless set as compared to the voiced set. It is reasonable to infer from that distributional fact that there may once have been a *p* in pre-Irish and that a sound change eliminating *p* from the phonemic inventory of the language may have occurred.

Similarly, other sorts of synchronic irregularities—thinking of morphophonemic alternations and gaps in patterns as a type of ‘irregularity’ in that they constitute nonuniformity in the system where uniformity might otherwise be expected—provide a basis for the formation of historical hypotheses. For instance, within Latin, one irregularity about combinations of prepositions and the objects they govern is that whereas the order of elements is usually Preposition + Object, both with noun objects and pronoun objects, as in *cum Marcō* ‘with Marcus’ or *ad eōs* ‘to them,’ when the preposition is *cum* ‘with’ and the object is a pronoun, the pronoun goes first and the preposition is enclitic to it, e.g. *mēcum* ‘me-with’ (i.e., ‘with me’). This invites the inference that at an early stage of Latin, prepositions more generally were enclitic and thus that *mecum* reflects an archaic usage that, for whatever reason, had not fallen in line with the regularizing that other preposition-plus-object combinations underwent.

3. Confirming the Results of Internal Reconstruction

The method of internal reconstruction thus allows for the generation of hypotheses, of greater or lesser plausibility, about an earlier linguistic state of affairs. Some of these hypotheses can be readily ruled out, but once that is done, how might one determine if the best remaining hypothesis is accurate? The answer lies in the other historical linguistic reconstructive method, the comparative method, and thus in bringing external evidence from other languages to bear on the internally arrived at hypotheses.

That is, in the case of the Greek word for ‘honey,’ the evidence of Hittite *milit* ‘honey’ and Gothic *miliþ* ‘honey’ shows that a reconstruction of the oldest form of this word in the Greek branch with a final *-t-* in the stem is well warranted. Similarly, cognates to the Latin forms for ‘sleep,’ such as Greek *húpnos* ‘sleep’ and Sanskrit *svapna-* ‘sleep,’ point to the validity of reconstructing the pre-Latin form of ‘sleep’ as **sop-no*, and cognates with *p* in various related languages but

Ø in Irish, such as Latin *pater* 'father,' compared with Old Irish *athir*, show that the positing of a prehistorical **p* in early stages of the Celtic branch of Indo-European is a reasonable step to take. And, in the case of the Latin *amnis*, external comparisons such as Hittite *ḫap-* 'river,' confirm the speculative hypothesis of a pre-form **ap-nis* that was arrived at by extending the internal reconstruction of *somnus* to an isolated form.

The most famous example of the confirmation of internal reconstruction via comparative evidence is the case of Ferdinand de Saussure's 'coefficients sonantiques' (later somewhat erroneously referred to by others as 'laryngeals'). These are a class of consonants that Saussure (1879) posited for a stage prior to Proto-Indo-European, working just from the evidence of reconstructed patterns for vowel alternations for the proto-language. For instance, he assimilated the pattern of *ē* alternating with *ə* to that of *er* alternating with syllabic *r*, by hypothesizing that there was a consonant that had the property of lengthening a preceding vowel and surfacing as a syllabic element when the vowel was eliminated (for morphological reasons, an 'ablaut' state of the root referred to in Indo-European linguistics as the 'zero-grade'). This was a purely internally arrived at reconstruction but it received support over 40 years later when Jerzy Kuryłowicz (see Kuryłowicz 1927) demonstrated that certain consonants in Hittite, usually transcribed as *ḫ*, appeared in exactly the positions that de Saussure predicted for his 'coefficients sonantiques.' This discovery not only confirmed de Saussure's hypothesis, paving the way for the development of what is now called 'laryngeal theory' for the Indo-European phonological system, but also validated the methodology of internal reconstruction.

4. Limitations of Internal Reconstruction

For all the fact that internal reconstruction has been shown to be a powerful means of shedding light on the prehistory of linguistic states that might otherwise not be amenable to any further historical speculation, it has its limitations as a method.

For one thing, not all synchronic alternations have arisen by the relatively 'clean' path that forms like Greek *méli* show. For instance, the alternation seen in the Greek noun for 'name,' with a nominative *ónoma* and a genitive *onómatos*, lends itself to the same sort of analysis as that given for *méli*, so that one might reconstruct the nominative as **onomat* and segment the genitive as *onómat-os*. That is a perfectly reasonable internal reconstruction, but the comparative evidence in this case is disconfirmatory: cognate forms in other languages show no sign of a *-t-* in this stem at all, neither in the nominative (cf. Sanskrit *nāma*, Latin *nōmen*, Hittite *laman*) nor in the genitive (cf. Sanskrit *nāmn-as*, Latin *nōmin-is*,

Hittite *lamn-as*). The *-t-* presumably entered the Greek paradigm in some way other than being an inherited part of the stem, quite possibly being added to the genitive due to influence from adverbial forms in *-tos* (e.g., *ektós* ‘except’) or else analogically based on genitives of *-t-*stems; i.e., there is no evidence for a prehistoric stage of Greek with a nominative **onomat*, even though that is the form that internal reconstruction would lead one to.

And, in the case of reconstructing a **p* for some pre-stage of Irish, the comparative evidence shows that a Proto-Indo-European **p* was lost on the way to Irish, and more accurately on the way to Celtic. Yet, the absence of a consonantal reflex of **p* in all of the Celtic languages points to the conclusion that the loss of **p* was a very early step in the development of the entire Celtic branch of Indo-European, and thus not as recent a phenomenon as a hypothesis based just on Irish evidence alone would suggest.

More generally, hypothesizing loss based on absence is a risky proposition; the fact that English lacks uvular consonants, for instance, does not mean the language once had them and lost them; it might well be the case that it simply has never had them.

Despite such limitations, internal reconstruction is useful in historical investigation, and, indeed, is widely considered to be among the standard methods used in historical linguistics; not surprisingly, therefore, it is included in handbook-style surveys of the field (see, e.g., Kuryłowicz 1973, or Ringe 2003) and in nearly all textbooks (Anttila 1972/1989 being a notable example where the method is given particular prominence) and specialized treatments of reconstruction methodology (e.g., Fox 1995: Ch. 7).

5. Concluding Remarks

In a very real sense, internal reconstruction can be thought of as a hypothesis-generating methodology, and to the extent that there are no constraints on hypotheses that may be entertained, engaging in internal reconstruction is a license to be creative and propose possible scenarios, i.e. historical hypotheses, that are constrained only by the plausibility offered by what is known about language and language change in general.

Still, especially given the interplay noted in section 4 between internal reconstruction and comparative data, one can wonder if internal reconstruction is really needed. That is, if one worked solely with the comparative method and compared Latin *somnum* with Greek *hupnos* or Sanskrit *svapna-*, it would be trivial to explain the *m : p : p* correspondence set by reference to its occurring in the context of a following nasal. Similarly, a direct comparison of Greek *méli* with Hittite *milit* would readily lead one to suppose that the Greek nominative

had once been **melit* and that a final-stop-deletion sound change had occurred. Thus it may well be that internal reconstruction rarely tells us something we could not know by other means.

There are, however, some circumstances in which internal reconstruction offers the only avenue for historical inferences. In particular, in cases in which there is no other potentially corroborating data available, internal reconstruction is the only method available. Such a case arises when one is dealing with a proto-language, reconstructed by comparative evidence; in order to push the temporal frame for the proto-language back even further than the comparative method allows for, applying the reasoning of internal reconstruction can offer some basis for surmises about the prehistory of the proto-language. The hypothesis of the nineteenth century Indo-Europeanist August Schleicher (see Schleicher 1871: 13, discussed also in Pedersen 1959: 270) that the nominative singular of the word for 'mother' (Latin *mater*, Greek *mātēr*, Sanskrit *mātā*, etc.) in Proto-Indo-European was not **mātē(r)* with a lengthened ablaut grade in the final syllable but rather **mātar-s*, a view reached independently but cast in a more modern form by Szemerényi (as discussed in Szemerényi 1990: 116), is essentially a form of internal reconstruction on the proto-language, deriving the final *-*ēr* from an earlier, 'pre-Proto-Indo-European,' stage involving the more widely distributed nominative ending *-*s* and the long vowel from a compensatory lengthening with the loss of that *-*s*. Moreover, there are language families for which comparative data from a range of languages is not easy to come by where internal reconstruction can help to get one started (see Campbell and Grondona 2007, for example) as well as instances where such data is lacking altogether, as in case of the language isolates (e.g., the American Indian language Zuni); in the latter situation, all reconstruction can only be internal, drawing just on data from that one language. In such a case, dialect variation could in principle offer some comparative basis for reconstruction, but in a technical sense, all the data would be coming from a single language, and thus would be 'internal.'

Thus, even if not always providing novel hypotheses or reconstructions that would not be possible otherwise, internal reconstruction does have something to offer the historical linguist and is an important and valuable part of the historical linguist's toolkit.

4 Typology and Universals

Hans Henrich Hock

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1. Introduction

The general goal of linguistic typology is the classification of languages based on structural properties, such as the formal properties of vowel systems or differences in word order.¹ A related goal is to distil ‘universals’ from such classifications, i.e. generalizations about what constitutes possible language types (‘absolute universals’) or which types are more likely to occur in the world’s languages (‘universal tendencies’). In historical/comparative linguistics, the term typology can also refer to the classification of linguistic changes; and again, certain types of change are considered to be universally possible, while others are not.

This chapter discusses both the role of general linguistic typology and universals in historical/comparative linguistics, and typologies of linguistic change.

2. Typology as an Evaluative Tool in Comparative Linguistics

As Comrie puts it,

... we can ask of a particular reconstructed language whether it is consistent with what we believe to be constraints on human languages, and if the answer is negative then we should seriously reconsider the reconstruction. (1993: 76)

On the face of it, this sounds like a credible approach. For who would want to reconstruct, say, a typologically unprecedented vowel system with high-front rounded [ü], central [ə], and low-back [ɔ]? In practice, however, things tend to be more complicated, since many typological universals are tendencies only; and as Comrie observes, there is no reason to assume that reconstructed languages are typologically more 'pure' than actually attested languages (1981: 205). Moreover, we must keep in mind that typologies are only as good as the evidence they are based on; new evidence may require serious reconsideration. The following discussion serves to illustrate these points.

2.1 Phonological Reconstruction and the 'Glottalic Theory'

The 'laryngeal theory' of Indo-European reconstruction² brought with it a reduction of the stop system from one with four distinctions (voiceless : voiceless aspirate : voiced : voiced aspirate) to three (voiceless : voiced : voiced aspirate). In a widely cited paper, Jakobson (1958) asserted that this system is typologically impossible, in that no language has voiced aspirates without corresponding voiceless ones.

Based in part on this typological claim,³ Gamkrelidze (often with Ivanov) and Hopper independently proposed an alternative 'glottalic' reconstruction with voiceless (± aspirate) : glottalized : voiced (± aspirate); see Gamkrelidze and Ivanov (1973, 1995), Gamkrelidze (1988) and Hopper (1973).

The reconstruction has run into a considerable amount of criticism (for a survey see Iverson & Salmons 1993). Relevant for present purposes is the fact that as shown independently by Hock (1986c) and Stewart (1989; see also Comrie 1993), the supposedly impossible typology voiceless : voiced : voiced aspirate is attested in Indonesian and West African languages. Jakobson's claim, thus, cannot be considered an absolute universal, although it remains a universal tendency. Moreover, as noted earlier, there is no reason for assuming that reconstructed languages are typologically more 'pure' than actually attested ones.

2.2 Syntactic Reconstruction: Proto-Indo-European Word Order

Greenberg's pioneering study of word order typology (1966, first published in 1963) established a number of correlations between the ordering of Subject (S), Object (O) and Verb (V) on one hand and other aspects of constituent and clause order on the other. One of these was that relative clauses in languages of the type SOV tend to be preposed to their head nouns, while they tend to be postposed in SVO and VSO languages. As Greenberg himself noted, however, some of the SOV languages in his sample had postposed relative clauses.

By the time of Lehmann (1974) and Friedrich (1975), Greenberg's typological observation had been supplemented by the claim that the preposed relative clauses of SOV languages lack relative pronouns and have something like relative verbs instead, and that relative clauses with relative pronouns are characteristic of SVO and VSO languages.

Given that the unmarked word order of early Indo-European languages is predominantly SOV, Lehmann concluded that the relative-clause type with relative pronouns found in all of the early Indo-European languages must be an innovation and that Proto-Indo-European had no such clauses. Friedrich, by contrast, claimed that the presence of relative clauses with relative pronouns in early Indo-European precludes the assumption that PIE was SOV type, but that it must have been SVO instead.⁴

Lehmann's and Friedrich's line of argument is problematic on several counts. First, as noted, Greenberg observed several SOV languages with postposed relative clauses. Moreover, Classical Latin, whose unmarked order is SOV, has relative clauses with relative pronouns and these are generally postposed. Since this typology, thus, is perfectly possible in natural languages, there is no reason against reconstructing it for PIE.

In fact, however, Greenberg's typology, as modified in Lehmann's and Friedrich's publications, is incomplete. As adumbrated by Watkins (1976), early Indo-European had structures of the relative-correlative type with relative pronouns (RP) correlating with correlative ones (CP) and without insertion of the relative clause into the main clause, as in (1) (from Sanskrit). This type turns out to be widespread in SOV languages (Downing 1978).

- (1) [tvám **tám** ... bādhasva ...]MC
 you.SG.VOC. that.SG.ACC.M (CP) bind.SG.2.IMPVE.MID
 [... **yó** no jīghāmsati]RC
 who.REL.SG.NOM.M (RP) us.OBL.CLIT. slay.DESID.SG.3.INDIC.ACT
 'You ... tie down that (evil-doer) who ... tries to slay us.' (RV 6.16.32)

Proto-Indo-European may thus be typologically 'pure' after all—a subtype of SOV languages that have relative-correlative structures.⁵ But as we have

seen, even if it weren't, there would be no reason against reconstructing a Proto-Indo-European with SOV plus postposed relative clauses with relative pronouns.

3. Typology and Sound Change/Typology of Sound Changes

3.1 Structural Typology and Change

A number of different typologies have been proposed for phonological structure. Among the more robust of these, with implications for linguistic change, are the Sonority Hierarchy, the tendency toward Open Syllables, and the Avoidance of Trimoraicity.

According to the Sonority Hierarchy, syllables preferably have increasing sonority in the onset and decreasing sonority in the coda. As a consequence, if certain changes introduce violations of the Hierarchy, they are repaired by other changes, such as the metathesis in (2).

(2) Proto-Iranian čaxra- 'wheel' > čaxr (apocope) > čarx (metathesis)

The tendency toward Open Syllables has had its strongest effect in the Slavic 'Open-Syllable Conspiracy' (Hock 1986c: 161–162 with references); and the Avoidance of Trimoraicity motivates the Pali 'Two-Mora Conspiracy' (Hock 1986c: 159–162).

While these tendencies, thus, seem to motivate a variety of linguistic changes, they can clearly be violated. For instance, what motivates the metathesis in (2) is the earlier apocope, which introduced a violation of the Sonority Hierarchy. More than that, violations can also be brought about by the extension of changes, beyond the context in which they were originally motivated. Thus, in Ossetic, an Iranian language of the Caucasus, metathesis has been extended to initial position, where it creates violations of the Hierarchy, which are repaired by prothesis, as in (2').

(2') Proto-Iranian θrayah 'three' > tra- > rta- (metathesis) > ärtä (prothesis)

3.2 System Balance and Chain Shifts

Since Martinet (1964) it has been accepted that the tendency for phonological systems to be balanced can play a role in linguistic change, in that changes introducing imbalances tend to lead to further changes that restore the balance, in a scenario of Chain Shifts. Two major types of such changes have been generally recognized, Drag Chains and Push Chains. In Drag Chains, a position

in the system emptied by an earlier change gets filled by a second change; in Push Chains, an incipient change that ‘threatens’ the position of a segment leads to that segment’s moving out of the way (so to speak); see e.g. Labov (1994).

The common wisdom holds that Push Chains may not be well established; but Gordon et al. argue for just such a change in New Zealand English (2004: 265–272).

3.3 Typology of Changes

Sound changes can be classified in terms of whether they are possible or likely (‘natural’), or impossible or unlikely (‘unnatural’). For instance, even if Gordon et al. may be right about New Zealand English, Drag Chains seem to be much more likely to occur than Push Chains. Similarly, anticipatory assimilation is more common than perseverant assimilation; intervocalic voicing or weakening is likely, while intervocalic devoicing or strengthening is highly unlikely; and the list goes on.⁶

There are also more specific generalizations. For instance, the metathesis in (2) is one of several natural responses to violations of the Sonority Hierarchy, while the change in (2’) is unnatural. However, as the example shows, naturalness can be overridden by phonological generalizations.

Further, the change in (3a) is a natural development (because of the common process of palatalization), while the reverse change in (3b) would seem unnatural (there being no linguistic process to motivate it). Note, however, that with coronal input, the case is less certain, since the assimilated output of palatalization does occasionally simplify to coronal, as in (3c).

- (3) a. $g > \check{j}$, $d > \check{j}$
 b. $\check{j} > g$
 c. $\check{j} > d\check{z} > d$ (as in Old Persian *dasta* ‘hand’ < * $\check{j}(h)asta-$)

Finally, sound changes can be classified in terms of their expected regularity, with dissimilation, metathesis and distant assimilation singled out as normally irregular. Note, however, that dissimilations and metatheses can occasionally be regular; see Hock (1986c: 113–116) for factors motivating such regularity. (See also section 4.1 below.)

4. Typology and Analogical/Morphological Change

4.1 A Typology of Changes in Terms of Systematicity or Regularity

Since the time of the neogrammarians, analogical change has been considered irregular, in contrast to (normally) regular sound change. However, even among

traditionally recognized analogical changes, two processes—four-part analogy and leveling—are typically more systematic than the rest. Moreover, analogical changes operating in terms of the extension of rule-governed general processes tend to be completely regular. Finally, sound change can be considered an analogical extension of phonetic variation. Hock (1993) therefore proposes a hierarchy, such that changes whose domain is most restricted (in terms of non-phonetic or nonphonological information) are least regular, while changes whose domain is unrestricted are regular.

4.2 Directions of Analogical Change

The issue of the natural direction of analogical change has been the subject of a famous discussion between Kuryłowicz (1947) and Mańczak (1958); for discussions see e.g. Hock (1986c: 210–237) and (1993), Winters (1997). The most robust generalizations emerging from the discussion are (i) morphophonemic alternations are more commonly eliminated (through leveling) than introduced (Mańczak), and (ii) in cases where an analogical, new form coexists with the old form, it is the former which is used in productive function, while the old form continues in marginal function (as in *brothers* vs. *brethren*).⁷

The 1960s and 1970s saw an extensive debate on ‘Rule Reordering,’ the issue of what motivates the fact that, in a process-oriented grammar, in cases such as German Final Devoicing (FD) and ə-Loss, the synchronic application of these processes has been reordered compared with their historical order; see (4). Eventually, the issue was resolved in favor of the view that the reordering is motivated by the ‘Transparency Principle’: In (4b), the order of ə-Loss after FD makes the latter rule opaque, in that its predictions are not met in forms with ə-Loss; the order in (4c), by contrast, makes FD transparent (see Kiparsky 1973). Though rule-based grammars are no longer in vogue, the Transparency Principle has survived and still turns out to be fruitful.

(4) a. Historical changes	tag	tagə	
	FD tak	----	
	ə-Loss ----	tag* (expected)	
		vs. tak (actually found)	
b. Synchronic rule order I	tag	tagə	
	FD tak	----	
	ə-Loss ----	tag	
c. Synchronic rule order II	tag	tagə	
	ə-Loss ----	tag	
	FD tak	tak	

4.3 Morphological Change: Grammaticalization

At least since the time of Bopp (1816) it has been assumed that morphological affixes were originally full, independent words.⁸ This assumption has in recent years led to a new framework in historical linguistics, ‘Grammaticalization’; see e.g. Hopper and Traugott (1993/2003), Fischer et al. (2004).

Grammaticalization is conceived of as a unidirectional process, commonly involving the development of a full word to function word, cliticization and eventual fusion of the clitic with its host, becoming an affix; see e.g. (5) from Spanish. The unidirectionality of the process(es) has been questioned; see e.g. Campbell (1991). However, counterexamples are relatively rare. Grammaticalization, thus, must be recognized as at least a universal, unidirectional tendency.

- (5) a. *escribir* he ‘I have to write’
 b. *escribir* he ‘I will write’
 c. *escribir=he* ‘I will write’ (see *escribir=lo=he* ‘I will write it’)
 d. *escribiré* ‘I will write’ (*escribir=lo=he**)

5. Typology and Syntactic Change

5.1 Word Order Typology and Change

In addition to the correlation between major constituent order and relative clause structure (section 2.2 above), Greenberg (1966) noted several other correlations. In the idealized form that these were picked up by later scholars, such as Lehmann (1974) and Friedrich (1975), these are as in (6). Note, however, that Greenberg’s sample included numerous exceptions to these correlations, especially as far as the order of adjective and noun is concerned. Further, Friedrich (1975) has argued that the latter correlation is not meaningful. (On this issue see also Dryer 1988.)

- (6) VSO/SVO (‘VO’) SOV (‘OV’)
 preposition + N (PN) N + Postposition (NP)
 N + Genitive (NG) Genitive + N (GN)
 N + Adjective (NA) Adjective + N (AN)

A number of scholars, especially Lehmann, considered exceptions to these correlations to indicate that the language in question is in transition from one pure type to another; and there were claims that a change in one or another of these different configurations would necessarily entail shift to a typology (OV or VO) which would be compatible with the new configuration.

Several problems should be noted concerning these later claims. First, many ‘inconsistent’ languages show no evidence of changing to greater consistency. More than that, English (which clearly has VO) has both GN (as in *the man’s house*) and NG (as in *the house of the woman*), while German (which is less clearly VO) has only marginal GN (as in *des Mannes Haus*) but productive NG (as in *das Haus der Frau*).

Second, closer examination of Greenberg’s sample (and other evidence) shows that different types (and subtypes) tend to cluster in different areas of the world. For instance, SVO is found in most of presentday Europe, in Southeast Asia and China, and in much of Africa; VSO is found in Modern Celtic, Afro-Asiatic (except where contact has introduced a different order), and Austronesian; SOV is found in most of Asia (other than Southeast Asia, China and Austronesian languages). The situation is similar in other parts of the world. Note that in many cases, the prevailing type cuts across different language families, such as European SVO in Indo-European and Baltic-Finnic languages; or Eurasian SOV in the rest of Uralic, Altaic, Indo-European Iranian and (most of) Indo-Aryan, Korean, Japanese, etc. These facts suggest that membership in one or another typology may depend on contact, rather than genetic relationship.

Third, ‘inconsistent’ typologies seem in many cases to be attributable, not to historical transition from one type to another, but to geographical transition between different (sub-)types. For instance, the following subtypes are distinguished in Greenberg’s sample of northern European languages, with Finnish intermediate between more ‘consistent’ western SVO + PN and ‘consistent’ eastern SOV + NP.⁹

(7) Norwegian/Danish/Swedish	Finnish/Estonian	Eastern Uralic
SVO	SVO	SOV
PN	NP	NP
GN	GN	GN
AP	AP	AP

Finally, there are problems with Greenberg’s (and later scholars’) classification of German, Dutch (and Frisian) as SVO, rather than SOV with placement of the finite verb in second position in main clauses (V2); see the German examples in (8). Significantly, in V2 languages, the position before the finite verb can be taken by any constituent, as in the second example under (8a). As will be seen in the following section, the existence of this additional type of major constituent order has consequences for historical linguistics. Moreover, it raises questions about earlier attempts to explain the change from SOV to SVO in Germanic languages.¹⁰

(8) a. *Main Clause*

Der Hans	hat	die Grete	gesehen	
Hans (S)	has	Gretel (O)	seen	
	[V, fin.]			
‘Hans has seen Gretel’				
Die Grete	hat	der Hans	gesehen	
Gretel (O)	has	Hans (S)	seen	
	[V, fin.]			
≈ ‘It is Gretel that Hans has seen’				

b. *Dependent Clause*

daß	der Hans (S)	die Grete (O)	gesehen	hat	
that	Hans	Gretel	seen	has	
					[V, fin.]
‘that Hans has seen Gretel’					

5.2 Motivations for Shift in Word Order

So far, the best-documented shifts in word order involve either a change from VSO to SVO or from SOV to SVO. The former is found in many modern Semitic (and other Afro-Asiatic) languages; the latter in most of the languages of Europe. Unfortunately, there does not seem any historical documentation of a shift toward SOV, except through contact; and the shift from SOV to VSO in Insular Celtic is somewhat controversial (but at least it is attested).¹¹ There is thus a considerable gap in our knowledge of what motivates word order shift.

At the same time, it is remarkable that the shift from either VSO or SOV to SVO seems to be a relatively common phenomenon. Does this mean that SVO is in some sense crosslinguistically more ‘natural’? Or is the frequent change from SOV to SVO attributable to the fact that it proceeds through an intermediate stage with V2?¹²

In the case of Semitic (Afro-Asiatic), Givón (1977) has suggested that the shift to SVO was motivated by discourse considerations and the tendency to place topics in front of the initial verb. Since subjects are the most prototypical topics, this permitted reinterpretation of surface SVO as basic.

The shift from SOV to SVO in the European languages has been plausibly claimed to have proceeded through an intermediate stage with V2, still preserved in early Romance, Germanic, Baltic and Slavic; see Hock (1982). The change toward SVO, with obligatory SV order, then can be attributed to the fact that, as in Semitic/Afro-Asiatic, subjects are the most prototypical topic and

thus placed in front of V2, making it possible to reinterpret surface SV as basic, rather than a subtype of Topic + V.

V2, in turn, can be explained as resulting from reinterpretation (and subsequent extension) of an earlier prosodically conditioned movement of clitic verbs to second position (P2), by Wackernagel's Law (see the chapter on Suprasegmental and Prosodic Historical Phonology and the references cited there). An argument in favor of this view would be the fact that just as there is P2 but no 'P -2' (i.e. prosodic movement to the position before the last sentential element), so there is V2 but no 'V -2'—an interesting typological fact.¹³ (For a similar perspective, which however differs considerably in detail, see Anderson 2005: 177–226.)

6. Typology and Language Contact

As we have seen in the preceding sections, word order typology seems to be strongly correlated with geography and language contact. This is true both of the distribution of major constituent-order types and of more specific, 'transitional' subtypes, as in the case of the northern European languages (example (7) above). Moreover, all well-documented shifts from VSO or SVO to SOV known to me, such as in Amharic, are attributable to contact.

The effect of contact and convergence extends not just to syntax, but also to other aspects of linguistic structure, including phonology. Thus, South Asia is characterized by a contrast dental : retroflex (except for Assamese and most of Tibeto-Burman), and this contrast has been attributed to the influence of the Dravidian languages (e.g. Emeneau 1974). While the hypothesis of Dravidian influence has been challenged (e.g. Hock 1996a), this does not affect the 'that' of South Asian convergence, but only the historical 'how.'

7. Concluding Remarks

Note that in all of these cases, it is contact that is responsible for typological change, and not the other way around. In fact, with the exception of certain phonological tendencies such as the Sonority Hierarchy, typology generally does not seem to play a major role in motivating linguistic change.

Notes

1. For a good history of typological studies see Koerner (1997).
2. A good survey is found in Mayrhofer (1986).

3. Other arguments, some of which are also typological, are irrelevant for present purposes. For a fuller discussion see e.g. Hock (1986c: 621–626).
4. Both Lehmann and Friedrich introduced other arguments; but these are not relevant for present purposes.
5. This issue is further developed in section 5.3 below.
6. A complete typology of sound changes is still a desideratum.
7. The latter generalization has been questioned by Kiparsky (1974b), who points to regularized forms in secondary function, such as *sabertooths*. However, these forms are not directly derivable from older forms like *teeth*, but rather from *sabertooth*, which itself is a new form, derived by compounding from *saber* + *tooth*. Being a new form, its conforming to the productive pattern of English plural formation is to be expected.
8. Bopp's use of this approach, to be sure, was highly speculative, and most of his accounts no longer stand up to scrutiny.
9. This adds support to the arguments by Campbell (1997: 55–67) for assuming that Finnish VO features result from contact with Germanic (and Indo-European Baltic). Note further that Campbell argues that some of the more anomalous 'inconsistent' types found in the world's languages are attributable to contact between different 'consistent' types (1997: 50, with references).
10. For instance, Vennemann (1974) claimed that reduction of nominal inflection led to SVO, thus establishing a linear distinction between subject and object. As the second example under (8a) shows, in V2 languages the order of subjects and objects is not necessarily fixed. Moreover, languages such as Hindi have undergone inflectional reduction, but have remained SOV. See also Comrie (1981: 207–208).
11. Watkins (1963) proposes an explanation that involves univerbation of prefixes and verbs interacting with second-position clitic placement. Others (e.g. Pokorny 1927–30) attribute the change to an (unknown or 'Berber') substratum. Yet others (e.g. Doherty 2004) claim that Celtic VSO arose via V2. Although Watkins's account has much to recommend it, its foundation is so specifically Indo-European that it is not likely to be replicated in other languages.
12. See below for the historical motivation of V2.
13. In generative accounts, V2 can be easily accounted for under X-bar theory, as movement to CP, IP, or a similar projection. However, the motivation for this movement (or for change from SOV to V2 syntax) is uncertain. Earlier accounts are criticized by Lightfoot (1993). However, his own account is problematic, too. According to him, children confronted with a language in which 'arbitrary' phrasal categories, without 'fixed functional or thematic role,' occur sentence-initially will have to assign these initial elements to a specifier position, which in turn requires a head, and that head is provided by movement of the finite verb. However, there are many languages in which the first element can be of this nature, but which do not have V2.

5 Internal Language Classification

Søren Wichmann

Chapter Overview

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1. Introduction¹

This chapter discusses methods of joining languages in groups based on (different degrees of) genealogical relatedness. This criterion is only one among many conceivable ones that may be used to classify languages. Other possible criteria include geography, evidence of language contact or the presence of certain typological features; but these types of criteria will be ignored here. The reason for the limited focus is not only lack of space, but also the special interest that genealogical classification holds within and beyond the language sciences. If languages can be shown to be related genealogically it means that they share a common ancestor. This, in turn, means that something useful may be said about specific human groups in prehistory in some given region through the inspection of the current related languages. But language classification is not only a tool for students of prehistory, it also serves to organize knowledge and direct research. For instance, if it can be shown that a given group of languages are related, then that group of languages may become a target for comparative research. Alternatively, if a given language turns out to lack relatives, then the language in question gains a position of special interest because of

its uniqueness. Thus, language classification is a natural preparatory step before the further in-depth study of languages.

Two aspects of the present contribution set it somewhat apart from most textbook introductions to the topic. First, language classification is treated not as *sui generis*, i.e. as a field confined to its own tradition, but rather as a subfield of general phylogenetics, a field which has traditionally been dominated by biology. Therefore, the terminology is often drawn from biology. Second, the focus is less on the state of the art and more on potential aspects of the future of the art.

In terms of both goals and methods there are many differences between external and internal language classification. By external classification, I refer to the joining of genealogically related languages into maximally inclusive groups. Such maximally inclusive groups are henceforth called families. An example of a family would be Indo-European. Provided that there is sufficient evidence for a higher-level grouping, for instance some version of Nostratic, then this would also be a family, in my use of the term (the example is used for illustrating a terminological issue, and is not meant to imply anything about how I evaluate Nostratic). Germanic, however, never constitutes a family in my use of the term because this group of languages, as all would agree, is certainly related to some other languages. External language classification has been pursued in many different ways, and a single, consistent method has yet to be applied to all the world's languages. Typically, families have initially been suggested on the basis of certain striking similarities and for some suggestions consensus has eventually been reached that the relationship in question was real, whereas other suggestions have remained controversial to various degrees (see Campbell and Poser 2008: 404–415 for a comprehensive list of such proposals). The types of similarities have been either lexical or grammatical in nature, if not both, but regardless of the nature of such initial observations consensus concerning the existence of a true phylogeny has never been reached until scholars were able to reconstruct vocabulary and grammar, and to show regular trajectories in the development from a proto-language to its daughters. Such work requires years of dedicated effort applying the comparative method, so there is typically a leap between the initial proposal of a distant genealogical relationship and the acceptance of such a proposal. For instance, it took half a century between the initial proposal of Austroasiatic by Schmidt (1906) until scholars began to establish it more firmly (cf. Pinnow 1959 and papers in Zide 1966), and Sapir's (1913) proposed relationship between Wiyot and Yurok and Algonquian was not generally accepted until the work of Haas (1958a).

While long-range comparison clearly merits discussion, little progress has actually been made in this field. Different approaches have been applied, such as the search for shared peculiarities in grammatical organization, which seems to have guided much of Edward Sapir's work, the search for cognates sharing

meanings pertaining to a fixed basic vocabulary list (Swadesh 1954), random searches for any possible cognates within a large group of languages (e.g., Greenberg 1987), searches for diagnostic elements, such as similar-shaped pronominals (Nichols 1996) or the comparison of abstract structural features (Dunn et al. 2008). It is not clear which sort of method works best. The only thing which is clear is that each is, at best, only a heuristic. None of them, not even some combination, could deliver the sort of proof for a genealogical relation that would satisfy any historical linguist.

Thus, the establishment of the world's language families has proceeded in a hodgepodge fashion—not by the application of a single heuristic followed by some established probative method. For this reason, and for reasons of space, little more will be said in this chapter about external language classification; the reader is instead referred to the book-length treatment by Campbell and Poser (2008).

Internal classification is the partitioning of a family into smaller units. Any number of terms can be introduced to name groups at different levels of inclusivity, but an analysis of the structures of linguistic phylogenies, to which I shall return below, shows that below the level of maximal inclusivity and above the level of languages there is only one non-arbitrary level of classification, which I refer to as 'natural genera.' Once a family is established there are different ways that clades (subgroups) of a family can be established. Clades are groups of languages that are mutually closer related to each other than to languages outside of the group. Two families of methods for establishing clades can be distinguished: character-based and distance-based. A character is a certain phenomenon, such as a cognate word, a phoneme, morpheme, a sound law, an abstract grammatical feature, a syntactic change, etc. which can be present or absent in a given language. Any sort of character may be used to classify languages, but the most widely used within the framework of traditional comparative linguistics are phonological or morphological changes, and within lexicostatistics cognate classes have traditionally been used. Distance-based methods use any sort of measure of distances among languages, establish a distance matrix and derive phylogenies from these. Character- and distance-based methods will be treated in turn in the following two sections.

2. Character-Based Classifications

The framework of the traditional comparative method offers a standard way of partitioning a family into subgroups. The first step consists in distinguishing between plesiomorphies (retentions) and apomorphies (innovations), basing reconstructions on the former and either excluding the latter from consideration when making reconstructions or explaining them as products of changes

that eventually derive from phenomena shared with other languages across the family, i.e. underlyingly plesiomorphic phenomena.

The next step of setting up subgroups now consists in looking for synapomorphies (shared innovations), distinguishing them from symplesiomorphies (shared retentions), the latter of which are useless in setting up subgroups. Typically, synapomorphies are chosen from the domains of phonology or morphology since a lot is known about directionality in these domains (in phonology certain changes are known to be more natural than others, such as $*p > f$ as opposed to the opposite, and in morphology mechanisms such as markedness shift and analogy are well-studied). Campbell (2004: 195) offers examples from sound changes in Mayan languages that have been used for the internal classification of this family.

Often one finds homoplasy, i.e. character states that are independently innovated in two or more groups of languages. This can happen when the innovation in question is a natural one occurring frequently across languages, whether they are related or unrelated; or it may happen because of lateral transfer, i.e. because of borrowing among languages. Homoplasy is the major challenge for internal classification because much is left to the intuitions of the researcher with regard to determining whether a shared character state can be considered synapomorphic or whether it should rather be interpreted as either an independently occurring natural change or the result of lateral transfer. Lateral transfer, in particular, is a problem for classification because a language change arising in some ancestral language spreads by the same mechanisms as a language change borrowed across groups of languages. Thus, a group of languages comprising the languages A, B and C, may be defined as a group because of a certain change shared by all three. But it may be difficult, if not impossible, to know whether the change spread among speakers at an early point when A, B and C constituted a chain of dialects, i.e. at the time of a common ancestor, or whether it spread at a time when the languages were already distinct (Garrett 2006). The best diagnostic for setting up a subgroup is therefore multiple shared innovations: while one change may spread among several languages, the likelihood of several such changes having spread at a late stage of complete differentiation is inversely related to the number of changes having occurred. By the same logic, homoplasy is distinguished from synapomorphies: if languages A, B and C share several changes while languages D, E, F, share several others, and A and F only share one, then it is logical to assume that the change shared by A and F is a homoplasy due to lateral transfer or chance. Geographical data inform such decisions: if a shared character state which is most likely to be due to lateral transfer is found in neighboring languages, then the hypothesis of lateral transfer is strengthened.

The method followed by historical linguists in producing their phylogenies (trees) is in a sense dictated by their model. The model is one of a branching

structure where a branch attaches to a root, other branches attach to the first branch, and so forth, and it incorporates two important assumptions: (1) the assumption of a reconstructible common origin dictates the existence of a root, and (2) the conception of the branching structure itself dictates that there be no lines that connect branches horizontally. While this model has been predominant in historical linguistics ever since it was introduced by Schleicher (1853), it is possible to draw up structures that conform to neither (1) or (2) and yet adequately represent classifications of a set of languages. Figures 5.1–5.5 illustrate three alternative classifications of a hypothetical set of four languages. In none of the classifications does a root occur; thus we are dealing with unrooted trees. Since we are not considering the common origin of the four languages we are also not trying to distinguish between synapomorphies and symplesiomorphies. Instead we simply map four different sets of character states depicted as abstract matrices in (1), where the rows correspond to languages and each column is a character which can either be present (1) or absent (0) in a given language.

(1) Matrices defining different relationships among four hypothetical languages

I	II	III	IV	V
A 1000	A 10000	A 100001	A 10000111	A 10000111111
B 0100	B 01000	B 010000	B 01000000	B 01000000000
C 0010	C 00101	C 001010	C 00101000	C 00101000000
D 0001	D 00011	D 000111	D 00011111	D 00011111000

In matrix I each language has its own unique characteristic not shared with one of the other languages. There is therefore no internal structure to the tree—it is completely star-shaped (Figure 5.1). In matrix II a character has been added which is present in C and D but absent from the two other languages. Now the tree gains some structure: C–D group together against A–B (Figure 5.2). In III yet another character has been added which is shared by A and D to the exclusion of B and C. In the kinds of trees that linguists traditionally operate with a conflict arises which cannot be solved because the data point in different directions. Are we to join A–B against C–D because of the fifth character or are we to join A–D against B–C because of the sixth character? In the algorithm called Split Decomposition, which is implemented in the phylogenetic software SplitsTree (Huson and Bryant 2006), no attempt is made to somehow resolve the conflict. Instead a square is inserted from whose corners branches lead to each of the four languages (Figure 5.3). This graphically depicts reticulations in the tree; the structure is less treelike the more such reticulations are found.

A resolution of the conflict may be obtained by collapsing parallel edges of the box. Since there is just one box with two sets of parallel edges, two possible resolutions are possible, and since the edges are equally long, one solution is as plausible as the other. This situation changes for matrix IV. Here two extra characters have been added which unite A–D against B–C such that there are now three characters supporting this configuration and only one character supporting A–B against C–D. This leads to the network in Figure 5.4, where the sides of the box are not equal anymore. Collapsing the longer two edges amounts to ignoring the single character that supported A–B against C–D. In practice, this is what historical linguists often do when they decide that a shared phenomenon which is distributed in an unusual way is most likely homoplastic (due to borrowing or chance). They may be well advised in doing so, yet the resulting clean tree structure represents a loss of information since, after all, homoplasies are also of interest to the student of language history. In the last matrix (V) yet another set of characters has been added which serve to conclude this brief introduction to phylogenetic structures. This is a set of three characters uniquely present in language A. What these produce is a lengthening of the branch leading to language A (Figure 5.5). In a traditional linguistic family tree branch lengths are not distinctive: the branches of a tree are simply arranged in whatever way is graphically most convenient. But by using precise algorithms that turn data into trees, however, it is possible to depict the distinctiveness of each node, including terminal nodes such as the one leading to A in Figure 5.5. In a tree or network that has distinctive branch lengths it is possible to read off information about the amount of evidence that sets off a node defining a subgroup or a single language from the rest of the languages. In contrast, in a tree or network that only depicts a topology, i.e. a mere arrangement of nodes, this kind of information is lost. Figures 5.1–5.6 show different relations among 4 hypothetical languages.

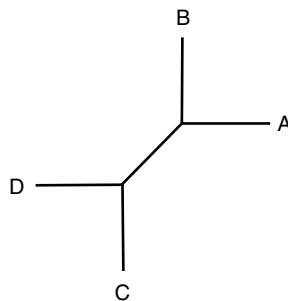
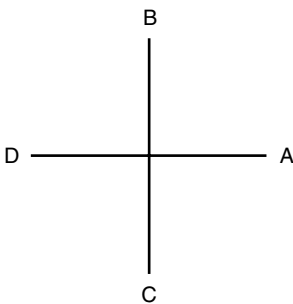


Figure 5.1 A starshaped phylogeny **Figure 5.2** An unrooted tree of 4 taxa (quartet)

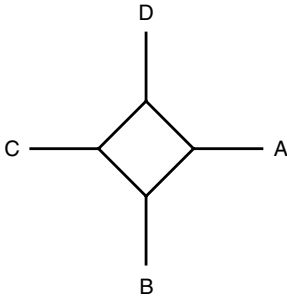


Figure 5.3 A network of four taxa

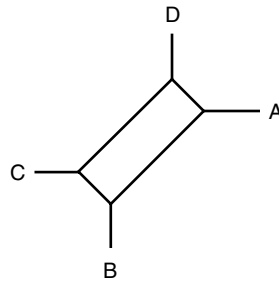


Figure 5.4 Another network of four taxa

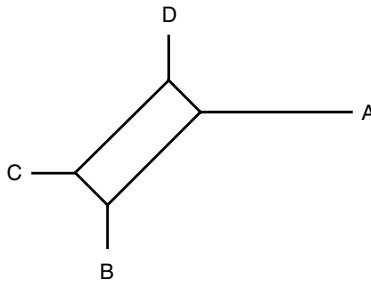


Figure 5.5 A network illustration distinctive branch lengths

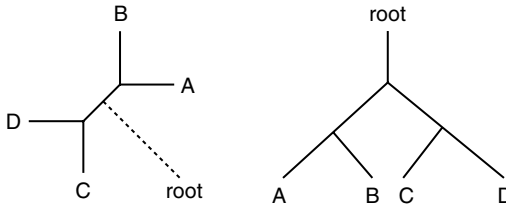


Figure 5.6a–b Two versions of the same rooted tree

The hallmark of the comparative method is reconstructions of ancestral states. Since the method operates with a hypothetical proto-language this reconstructed entity carries over to the trees we are used to seeing. If we return to the situation depicted in Figure 5.2 where a tree is partitioned in two groups we can imagine a proto-language that accounts for the commonalities between the ancestors of respectively A–B and C–D, and this then gets inserted as the root intermediate between A–B and C–D, as depicted in Figure 5.6a. This tree is equivalent to the more typical graphic depiction in Figure 5.6b.

In contrast to the reticulated networks of Figures 5.3–5.5, Figures 5.2 and 5.6 represent perfect phylogenetic networks, i.e., trees based on evidence concerning character states that are not in contradiction with one another phylogenetically speaking. In a non-rigorous application of the comparative method such trees are often set up despite the knowledge that there are facts contradicting the treelike structure. A truly perfect phylogenetic network, in contrast, would require a rigorous selection of characters whose changes down the tree are not repeated on different nodes. Such a selection of characters would therefore represent explicit arguments for the particular phylogenetic structure claimed to characterize a given language family. For Indo-European, Nakhleh, Ringe et al. (2005) and Nakhleh, Warnow et al. (2005) have presented such a selection, producing a perfect phylogenetic network for this family. Since the characters in question are the kinds of phonological and morphological innovations identified throughout the history of Indo-European comparative linguistics there is nothing new in their contribution, except that it sets more rigorous standards for the passage from data to inferring a tree. Given the advanced nature of Indo-European studies and the combination of a well-tested method in historical linguistics with a modern, rigorous phylogenetic approach this work sets an example for scholars working on other families. Unfortunately, with a few exceptions, other language families have not been studied in the sort of depth where so many details about phonological and morphological developments are known as is the case for Indo-European. Therefore many classifications take recourse to lexicostatistics, which serves as a shortcut in language classification inasmuch as it draws upon a highly selective dataset.

Different lexicostatistical methods have developed, but they share the same sort of dataset, which is a set of words sharing the same meanings across the languages compared. Typically the standard 100-item Swadesh list or some variant thereof is used. Traditionally lexicostatistics has been distance-based, using percentages of shared cognates for each language pair. But the data are discrete characters. It is generally the case that a matrix of characters can be transformed to a distance matrix, but since such a transformation typically represents a loss of information it should probably be avoided, if possible. To illustrate how a character-based approach to lexicostatistics works let's consider a set of four Swadesh list items for four Germanic languages.

(2) Four Swadesh items for three Germanic languages

	Danish	Swedish	Dutch	English
'person'	menneske	människa	mens	person
'skin'	skind	skinn	huid	skin
'fire'	ild	eld	vuur	fire
'leaf'	blad	löv	blad	leaf

A linguist without expertise in the Germanic languages would derive the matrix of cognate classes in (3) from the data in (2):

(3) Cognate classes corresponding to (2)

	Danish	Swedish	Dutch	English
'person'	a	a	a	b
'skin'	a	a	b	a
'fire'	a	a	b	b
'leaf'	a	b	a	b

Although Swadesh recommended not drawing upon knowledge about loanwords for one's decision it is clear that if we do, much noise in the data can be avoided. This is a way to avoid a minor evil of skewing the relation among related languages such that those which have had more contact are joined closer to another because of loanwords; more importantly, perhaps, a major evil of joining unrelated languages more closely because they happen to both have borrowed basic vocabulary from some major languages such as Arabic (true of many languages in Eurasia and Africa) or Spanish (true of many languages in Latin America) can be avoided. As regards the examples in (2), English has borrowed *person* from Middle French and *skin* from Old Norse. The corresponding forms may profitably be treated as if English lacked words for 'person' and 'skin.'

Some phylogenetic algorithms take discrete characters as input and may be applied to derive trees from abstractly encoded cognate classes. Often there is a limitation on the number of different character states allowed for in the input. This turns out to be a problem for larger families where there may be dozens of different etyma for a single basic vocabulary meaning. This problem is solved by recoding each character as a number of binary characters corresponding to each character state. To use the Germanic example for an illustration of this procedure, the character state represented by the cognates *blad* and *blad* in Danish and Dutch is now treated as one whole character, where Danish and Dutch score 1 for 'present,' while English and Swedish score 0 for 'absent.' Similarly, the character state represented by Swedish *löv* and English *leaf* is recoded as a character, where Swedish and English score 1, while the two other languages score 0. This produces a larger matrix, as illustrated in (4).

(4) Character states of (3) recoded as binary characters

	Danish	Swedish	Dutch	English
'person-1'	1	1	1	0
'person-2'	0	0	0	1
'skin-1'	1	1	0	1
'skin-2'	0	0	1	0

'fire-1'	1	1	0	1
'fire-2'	0	0	1	0
'leaf-1'	1	0	1	0
'leaf-2'	0	1	0	1

A variety of phylogenetic algorithms and implementations thereof (typically in software freely distributed on the internet) are available for turning such matrices into phylogenies. Among the currently most sophisticated and apparently most adequate is so-called Bayesian inference (Huelsenbeck and Ronquist 2001), which is a complicated algorithm that generates different trees and selects the set of most adequate ones by measuring their 'posterior probabilities.' Other sorts of algorithms tend to work the other way around, i.e. by starting from the data and subsequently fitting trees to them rather than starting from trees and, working through different trees, finding one or more that have a maximal likelihood given the data. Computational phylogenetics is a rich and rapidly developing field. For a general in-depth introduction see Felsenstein (2004). Introductions to linguistic computational phylogenetics may be found in Nichols and Warnow (2008), Wichmann and Saunders (2007) and McMahon and McMahon (2005).

3. Distance-Based Classifications

From its outset, lexicostatistics has operated with distances among languages as a criterion for their classification. When Swadesh (1950) introduced the method, he measured cognate percentages on a standard wordlist for Salishan languages. The kind of representation he chose for the results then as well as in subsequent works was a rather inelegant format, where language names were put in boxes whose mutual arrangement was intended to indicate their genealogical relations. To facilitate the task of arranging the boxes he arranged (or binned, using the technical term) the lexical distances in discrete groups from zero to some maximum. Language groups separated by two units of time depth were put in adjoining boxes with a common boundary, separations of three units were shown by a narrow space between the boxes and separations of more than three units by a wide space. The procedure constituted a primitive sort of phylogenetic algorithm. Had Swadesh attempted to draw up tree structures more similar to those standardly used, his method would have looked less alien in the eyes of the historical linguistics community and it would have been easier to compare his results to those of other historical linguists. Unfortunately, however, the development of methods to create phylogenetic trees from distance data was still in its infancy around the time of Swadesh's untimely death in 1967. An early algorithm which is conceptually so simple that it can be

applied by hand is UPGMA or Unweighted Pair Group Method with Arithmetic means (Sokal and Michener 1958). The first step in the method consists in joining the pair of taxa, A and B, that have the smallest distance and then redefining this pair as a taxon in itself. Then the distance matrix is recalculated by setting the distance from the new A–B taxon to each other taxon equal to average of the distance from A to the other taxon and from B to the other taxon. Now the joining of closest taxa is repeated, and the procedure continues until all taxa are joined in a tree. While simple, this algorithm has the disadvantage that it assumes that rates of change are equal. Among many other distance-based algorithms that do not make this assumption the one called neighbor-joining (Saitou and Nei 1987) is currently the most widely used.

Counting cognates on a standard meaning list is mostly straightforward for a relatively young family, but it becomes tenuous for distantly related languages, where it is entirely left to the linguist to decide, based on acquired knowledge and intuitions about typical sound shifts, what constitutes and what does not constitute a possible cognate. Moreover, a linguist comparing wordlists from languages not normally assumed to be related would suspend normal evaluations of cognacy in light of the knowledge that the languages compared are not assumed to be related. In this case it would be even more difficult to remain objective. To overcome the subjectivity involved in cognate identification different computational approaches have been developed (Oswalt 1970, Guy 1980, Goh 2000, Kondrak and Sherif 2006, Brown et al. 2008). Such methods, however, have so far not had any practical application in the classification of languages.

More recently, another approach to the computational classification of languages based on lexical information has developed. The approach is based on measurements of phonological distances among words, and pays no attention to whether they are cognate or not. While there are different ways of measuring such distances in the literature, most of them take as their point of departure the Levenshtein or ‘edit’ distance, which is defined as the minimal number of substitutions, deletions and insertions which it takes to get from one word to the other (Levenshtein 1966). While initially applied to dialectological data (Kessler 1995, Nerbonne et al. 1999), Serva and Petroni (2008) and Holman et al. (2008a) have used Levenshtein distances to classify languages. The advantages of the method are that it is computationally much less costly and conceptually simpler than cognate identification procedures. It therefore holds promise to become an effective tool for producing provisional classifications of languages and dialects. In fact, using the subset of the 40 most stable items on the 100-item Swadesh list which was identified by Holman et al. (2008b), Müller et al. (2009) have succeeded in producing a tree based on lexical distances among 3,384 languages and dialects in the world and are continuously updating their results as the database of the so-called Automated Similarity Judgment Program

(ASJP)² expands. Wichmann, Holman and Brown (n.d.) provide some statistics on the comparison of the ASJP classifications with those of experts, showing that the agreement is quite variable, but that there is a tendency for the amount of agreement to be inversely related to the size of families, suggestion that for large families that are not yet well worked out in terms of their historical configurations, the new method may be of utility as an approximation to the kinds of results that might eventually be reached with more in-depth work within the framework of traditional comparative linguistics.

The ASJP method also allows for setting up objective, arbitrary criteria for different levels of genealogical groups. For instance, an IE-level group could be defined as a group of languages having a maximal time depth corresponding to that of Indo-European. Such an approach is likely to yield language groups that are either uncontroversial or ought to be uncontroversial. In addition, many other types of clustering of the world's language families would be possible, including one which I discuss in the following section.

4. Subgrouping for Comparative Purposes

This section explores how subgroups of languages can meaningfully be established such that they are comparable across families. Two different strategies will be considered, where the first is a strategy to establish groups that are comparable in age across families, the age being chosen arbitrarily, and the second is a strategy to find an intermediate level across families where a partitioning emerges naturally rather than being arbitrarily posited.

The first of these two strategies has been applied in work by Matthew Dryer. In order to establish genealogically balanced language samples for typological purposes Dryer (1989: 267) introduced the notion of 'genera,' which was defined as 'genetic groups roughly comparable to the subfamilies of Indo-European, like Germanic and Romance.' In some cases a genus is also a family. In Dryer (2005: 584–644) more criteria were included in the definition. Here it is said that 'a genus is a group of languages whose relatedness is fairly obvious without systematic comparative analysis'; 'a genus in one family is intended to be comparable in time depth to genera in other parts of the world'; and 'if there is evidence of time depth of groups, the genus would not have a time depth greater than 3,500 or 4,000 years'; finally, Celtic is given as the prototype for a genus. A specific age for Celtic is not offered, but it follows from the discussion that its age is considered to be close to the upper bound for genera. While Dryer admits that his list of genera is really only based on educated guesses, it is possible to test the relative time depths of his genera using the ASJP data mentioned in the previous section. Currently the database allows for assigning relative ages to 278 of Dryer's genera. These ages are found by partitioning the

given group of languages in two using the structure of a neighbor-joining tree rooted by its midpoint, where the midpoint is defined as the point in the structure equidistant between the two most divergent members. The average lexical distance is then found for all language pairs whose members are separated by the root, and this average distance represents the relative age (an absolute age may also be calculated given a set of calibration points where a linguistic splitting event is associated with a known date, but this is a problematical area of research which I shall not bother to enter). The result is that 198 of Dryer's genera have ages that are lower than that of Celtic (as estimated using data from currently spoken or recently extinct languages), while 79 have ages that are higher. While many of the latter are perhaps still within reasonable bounds of Dryer's definition, they include many which are actually older than Indo-European. Some of the dates are doubtful because trees are skewed such that one of the major branches contain just one language, which raises the influence of this single language on the date out of proportions and increases the margin of error. In other cases problems relating to the data, such as complex morphologies that have not been taken properly into account, may have inflated the age estimate. But in the following cases age estimates higher than Indo-European are well supported—in Africa: the West Chadic subgroup of Afro-Asiatic, the Ubangi, Southern Atlantic, Northern Atlantic, Kwa, Gur and Adamawa subgroups of Niger-Congo; in the Papuan realm: East Geelvink Bay, Morehead and Upper Maro Rivers, the Wapei-Palei subgroup of Torricelli, the Madang, Eastern Highlands and Dani subgroups of Trans-New Guinea; and in South America: the Ge-Kaingang subgroup of Macro-Ge. Other families are over-differentiated. Sometimes this is because a subgroup which would be too young to count as a genus is seen by experts as directly branching from the root of the family tree and therefore, by being excluded as a member of some other genus, must by necessity count as a genus in itself. Such cases are inevitable, but there are more problematical cases, where a family is divided into genera even though the family itself is younger than Celtic. These include Dravidian, Tai-Kadai, Chukotko-Kamchatkan and Wakashan. Thus, a thorough revision would be needed to produce an adequate list of genera in the sense of Dryer (1989, 2005).

The previous paragraphs treated the issue of establishing genera across families based on an arbitrary age criterion. I now turn to the issue of whether there is support from the internal configurations of language families for different levels of classification, and I shall argue that there is support for a notion of natural genera. Unlike a Dryer-type genus, a natural genus is not defined arbitrarily by an age criterion, but is found individually for a given language family by a novel method presented in Wichmann, Murilo Castro de Oliveira et al. (2009). Such natural genera have varying ages across families, but they strongly tend to emerge around the time when a proto-language has fragmented

into different languages which are beginning to form their own dialects, i.e. when each daughter of the proto-language is beginning to form its own lineage. The finding that natural genera emerge from the immediate daughters of a proto-language is intuitively appealing, as is the finding that it is possible to distinguish languages from dialects, but, crucially, there is nothing subjective about the method by which I propose to identify such intermediate levels of classification.

If there are transitional levels in phylogenies corresponding to something like genera it should be possible to find them by plotting distances³ among all language pairs in the family. Language pairs whose closest ancestor is the proto-language itself should have distances normally distributed around some mean, since they would have the same age of separation. The distances for language pairs whose closest ancestor is somewhere further down the tree would not fit this distribution and a so-called skew normal distribution would arise. Figure 5.7 shows what such a distribution looks like for Uto-Aztecans. It can be appreciated that as one moves from right to left until coming close to an 80 percent distance, the distribution begins to be no longer normal (symmetrical around a mean). Moving further to the left there is another peak. This would correspond to different languages within genera. Again, in the left part of the curve, there is transition, this time presumably from languages to dialects.

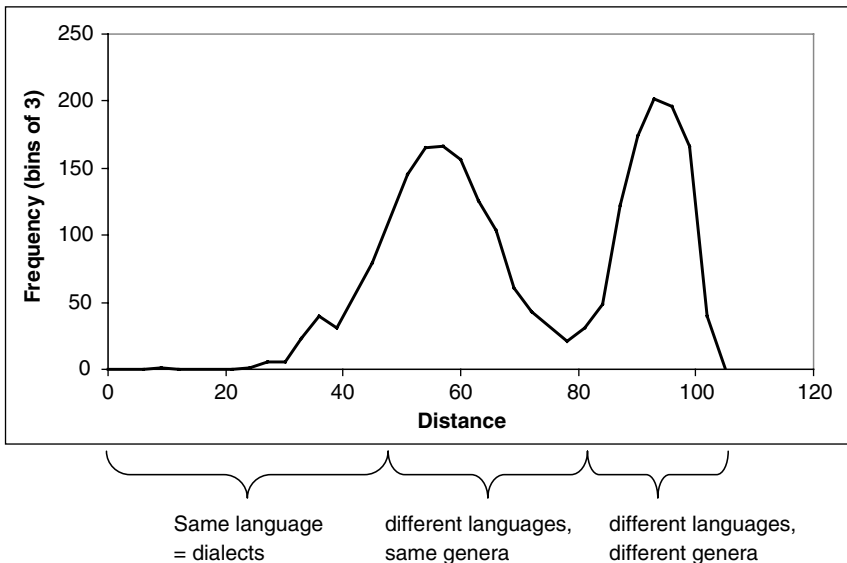


Figure 5.7 A frequency plot of distances for pairs of Uto-Aztecans

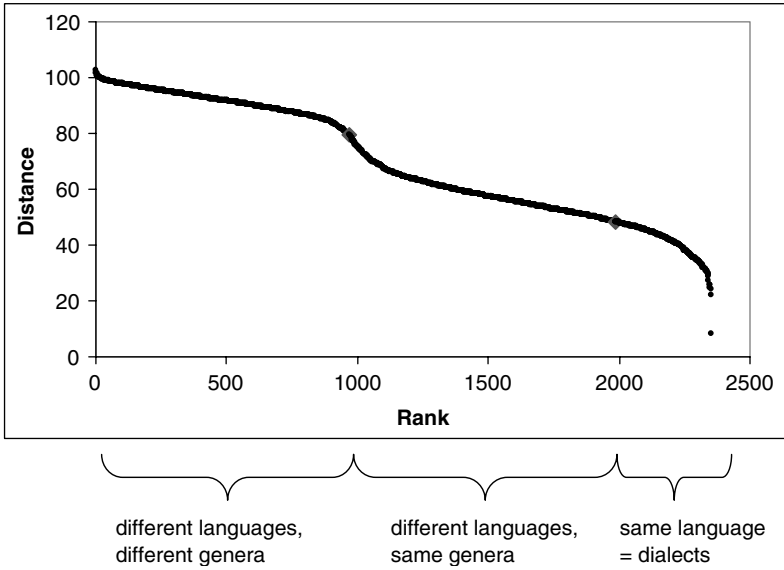


Figure 5.8 A rank-by-distance plot for Uto-Aztecan

The exact positions of the transitions are hard to discern from a distance-by-frequency plot such as that of Figure 5.7. For this purpose another type of plot, shown in Figure 5.8, is more useful. It is based on the same data but represents the transitions among the different regimes in an alternative, perhaps more vivid way.

The way in which the transitional points in the curve of Figure 5.8 are found can be pictured as a problem of fitting the largest possible box under each of the relevant segments of the curve. Going from left to right we see the first transition taking place somewhere just before rank 1000 is reached. An exact point can now be found by finding the maximum of the product of distance and rank for the segment where the rank is lower than 1000. The distance corresponding to this maximum turns out to be 79.4 percent. The next transitional level is found in a similar way for the segment where the rank is higher than 1000, and turns out to correspond to a distance of 48.4 percent.

In Wichmann, Murilo Castro de Oliveira et al. (2009) 18 plots were produced for families that are sufficiently well attested in the ASJP database to be amenable to this kind of treatment. The relative ages of the families were determined from distance measures as described towards the beginning of this section. Then the relative ages corresponding to the points of transition between languages in different and same genera were subtracted, and the average time

from the proto-language to the emergence of genera could be determined. This average age was a little less than the relative age our method assigned to Slavic. Translating it into an absolute age would require calibrations that are bound to be controversial, but, as a matter of fact, different calibration do not give widely different results—all point to a lifetime of protolanguages of somewhere around a millennium, perhaps a bit more. Given the clear existence in all the world's larger families of transitional points for genera such as the one shown in Figures 5.7–5.8 for Uto-Aztecan, it may be inferred that there is such a thing as natural genera, and given their average age, it may be inferred that genera arise at about the time when the immediate daughters of the proto-language begin to form their own offspring. Since there are no other transitions until the family-to-dialect transition it is only the highest splits in the trees that correspond to genera.

The ASJP dataset currently only contains a few families with a large representation of dialects; the Uto-Aztecan dataset plotted in Figures 5.7–5.8 is unique in that the majority of the speech varieties are very close (nearly all of them being varieties of Nahuatl), while clearly distinct languages form a minority. Thus, presently not much may be inferred about a typical lexical distance or age separating languages and dialects. But in a near future, using this methodology, it should be possible to establish that there is, in fact, a meaningful distinction to be made between languages and dialects, and then to define this distinction quantitatively.

5. Outlook

External language classification was treated only cursorily in this chapter. History has shown that there is often a great leap from the initial proposal of a family relation to the point where the relationship has become accepted and generates a field of scholarship. There is currently an abundance of interesting proposals concerning genealogical relations which wait to be fleshed out by more evidence. Until then, such proposals are bound to be controversial. There is clearly progress ahead in this area, but it looks to be as slow as it has always been, since historical linguists, while they have developed several interesting heuristics over the past century, have failed to produce methods that would rapidly prove a distant relationship to the satisfaction of the entire community of historical linguists.

Where linguists tend to agree more is with regard to the internal classification of language families. There are discussions over this as well, but controversies tend to be more controlled because there are clearer criteria for internal than for external classification. This relative methodological success opens up

an area of study which has so far largely been neglected within historical linguistics, namely the study of family trees within the wider framework of phylogenetics. Given a rich set of study objects, namely all the phylogenies for the world's language families, we may begin to discern shared or distinctive structural patterns. For instance, we may wonder about whether such trees are more or less balanced in comparison to, say, biological trees (Holman 2009), whether they exhibit natural clusters revealing something about the population dynamics that produced them (Wichmann, Murilo Castro de Oliveira et al. 2009), whether they show effects of increased rates of change as populations diverge (Atkinson et al. 2008), and so on. To address or even ask such questions requires quantitative thinking and ways of transforming language data into numbers. This brings lexicostatistics, which is often seen as nothing but an inferior approach to language classification, into a renewed focus, because what this method does is precisely to transform language data into numbers. Nothing, however, precludes us from developing other quantitative approaches to language comparison, and the field is certain to see interesting developments in this direction in the future.

Notes

1. My sincere thanks go to Johanna Nichols and Eric W. Holman for helpful comments on this chapter.
2. I am grateful for my fellow members of the ASJP consortium, Dik Bakker, David Beck, Oleg Belyaev, Cecil H. Brown, Pamela Brown, Matthew Dryer, Dmitry Egorov, Pattie Epps, Anthony Grant, Eric W. Holman, Hagen Jung, Johann-Mattis List, Robert Mailhammer, André Müller, Uri Tadmor, Matthias Urban and Viveka Velupillai, for permission to use the database contents and software developed by these scholars in some of my analyses. As this paper goes to press, an online version of the database has been made available as Wichmann et. al. (2010).
3. The distance measures used for the plots in Figures 5.7–5.8 are based on Levenshtein distances, but are modified to take into account variable word lengths and accidental phonological similarities. The exact nature of these modifications need not concern us here (see Bakker et al. 2009: 171 for a full description), but to avoid confusing the reader it needs to be pointed out that these modifications sometimes lead to distance 'percentages' that are greater than 100.

Part II

PHONOLOGICAL CHANGE

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6 Segmental Phonological Change¹

Joseph Salmons

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1. Introduction

This chapter explores the modification of individual speech sounds over time. Along the way, I develop key examples of types of change, and outline some major approaches to understanding sound change.

Our focus lies on structural issues in phonological change, and a few 'big questions' underlie much such research.² First, contrasts can change over time. Second, patterns of alternations in word forms both provide evidence of sound change and are interwoven with it. Third, the segmental shapes of syllables, feet and words change over time. Those themes are all explored in this chapter.

Segmental change is in many ways the traditional backbone of historical linguistics and an early pillar of linguistic science as a whole. Collinge (1995: 203–204, see also now the far more detailed treatment in Campbell and Poser 2008: chapters 2–4) observes that many early efforts at comparative linguistics were

morphologically oriented, until Rask insisted ‘that a defensible prehistoric stage can be reconstructed, that sounds are the central body of evidence, and that vicissitudes . . . must be properly reported.’ Grimm was ‘convinced by Rask as to the sheer usefulness of phonology,’ events that led eventually to the Neogrammarian formulation of the ‘exceptionlessness of sound laws’ by Brugmann and others.³ The correspondences now often known as Grimm’s Law were apparently first reported by Lhuyd in 1707 (see Campbell and Poser 2008: 29), and then made famous by Rask in 1818. Comparing an assumed ancestor of Latin and Greek with Old Norse/Icelandic, Rask observed the systematic correspondences between voiceless stops and fricatives, assuming that stops had changed to fricatives:⁴

(1) Rask’s correspondences for the Germanic consonant shift

Correspondence	Examples
p to f, e.g.:	platus ‘broad’ ~ flatur ‘flat’ patēr ~ fadir ‘father’
t to þ, e.g.:	treis ~ þrír ‘three’ tego ~ þek ‘cover, roof’ tu ~ þu ‘you’
k to h, e.g.:	kreas ‘meat’ ~ hræ ‘dead body’ cornu ~ horn ‘horn’ cutis ~ hud ‘skin’

The recognition of the regularity of these correspondences (and ultimately changes) opened the door to the rigorous, scientific study of sound change. But surely part of what is so striking about these particular changes is the abstract featural pattern: Not only do voiceless stops become fricatives, as illustrated here, but voiced stops become voiceless and voiced aspirated stops lose their aspiration, in chain-like fashion. This overall systematicity calls attention to the distinctly PHONOLOGICAL, rather than merely PHONETIC character of sound change.

This survey begins with assimilation and traditional efforts to explain it by appeal to ‘ease of articulation’ (section 2). Section 3 outlines a ‘preference’-oriented approach to changes associated with syllable structure. Section 4 addresses final devoicing and efforts to anchor it in Universal Grammar (UG). Section 5 discusses metathesis and dissimilation, often irregular patterns of change, in light of recent work giving the listener a central place in sound change. Section 6 turns to vocalic chain shifts in the context of the study of sound change in progress. Section 7 treats the overarching issue of a possible ‘life-cycle of sound change,’ and section 8 concludes.

2. Assimilation and Ease of Articulation

Assimilation is a prototypical sound change. As the name suggests, it covers processes whereby segments become more alike, processes which are common-places in both synchronic alternations and historical change.

Consider the sharing of laryngeal features within obstruent clusters.⁵ In Indo-European, a *-t suffix triggered a laryngeal assimilation of the final stop in the root *nég^w- ‘become dark’ yielding Indo-European *nék^wt-, ancestor of *night*. Voiced *g^w takes on the voicelessness of *t, a process which created many daughter-language alternations.⁶ This pattern and many others—like assimilation of /n/ to the place of following obstruents with /in+/ of *impossible*—represent partial assimilation, where segments come to share some feature(s) but remain distinct. Total assimilation can be illustrated with similar changes within Indo-European: In Italian *notte* ‘night,’ the old cluster has yielded a single long stop. Or, for instance, Sihler (1995: 207) gives this history of the Attic form for ‘eye’: *omma* (ὄμμα) < *opma < *ok^wma.

In the above examples, assimilation is regressive, from right to left, but progressive assimilation is also well-attested. Historically, Germanic languages had /x/ with a relatively unrestricted distribution, including codas (cf. Robinson 2001). Some modern German dialects, like Alemannic, retain the original velar fricative pronunciation [x] in codas regardless of the preceding segment. In most varieties of German, though, a progressive assimilatory process arose so that after front vowels, the fricative is realized as palatal [ç].⁷

The examples above reflect contact (‘adjacent’) assimilation. ‘Distant’ assimilation is common with laryngeal and manner but not place features in consonant harmony (Rose and Walker 2004). Distant place assimilations are, though, widespread with vowels, such as Germanic umlaut. These vowel-to-vowel assimilations take place over intervening consonants and perhaps syllables. For example, Old High German formed adverbs in -o from adjectives, including forms in -i. In the latter case, back stem vowels like /o:/ took on the frontness of following *i* (or *j*), informally illustrated below. Those ‘triggers’ reduced over time and were lost.

(2) Old High German *i*-umlaut

OHG	German		
skōni	schön	‘beautiful’	s k o: n i
skōno	schon	‘already’	

These assimilations created new distinctive front rounded vowels, and new alternations.

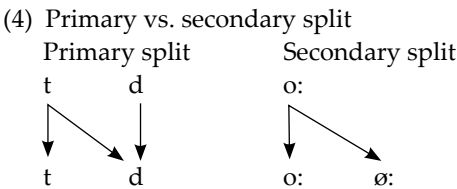
An example of indirect structural consequences comes from Dravidian. Krishnamurti (2003: 101–102) describes a lowering umlaut (much like Germanic *a*-umlaut) for Proto-South Dravidian:

- (3) Proto-Dravidian lowering umlaut
 *i, *u > Proto-South-Dravidian *e, o / # (C₁)__C₂-a
 *it-V- ‘meat’ > *et-a-V-
 *nuz-V- ‘to squeeze through’ > *noz-a

Such mid vowels are preserved in some relatives, like Telugu, but Proto-Tamil shows a later raising of mid vowels back to high in the same environment, so that the modern reflexes are *iracci* and *nuz-ai*, respectively, but Old Telugu *eṛaci* and Kannada *noze*.

The changes just described illustrate another central dimension of sound change, namely its impact on contrast, our first ‘big question.’ Hoenigswald (1960) reviews such impacts on overall sound systems, both inventory and the distribution of elements. For instance, merger and loss remove elements from the system. This can be conditioned, where a segment simply no longer appears in a particular position but still exists in the system overall. The nasal-stop examples above eliminate /n/ before a labial or velar obstruent, but /n/ remains in the system. In contrast, Old Latin *h* was lost unconditionally from the system (e.g., Hoenigswald 1960: 91).

Among phonemic splits, traditional sources distinguish primary from secondary. In primary split, a new sound merges with an existing sound, creating a redistribution of contrast, as in the nasal assimilation cases above or the laryngeal assimilations. In secondary split, the new sound expands the phonemic inventory, as happens with Germanic umlaut when the conditioning final vowels are lost (loosely modeled after Hoenigswald (1960: 77):



The most familiar and intuitive explanation for assimilation is doubtless ‘ease of articulation.’ Many scholars have conceived of all the above changes as lessening articulatory effort: A reduction in differences between sounds is assumed to correlate with less movement of the relevant articulators. Instead of producing one consonant with vocal fold vibration and the next without,

the same setting is used for both. Instead of producing a nasal with a coronal occlusion and an adjacent obstruent with a labial one, both are produced with the lips. Instead of producing a back vowel followed by a front vowel in the next syllable, the former becomes front. Following generations of others (e.g., Paul 1920 [1880]: 56), Hoenigswald wrote (1960: 73):

A phonetic comparison between earlier and later forms in sound change very often, perhaps generally, suggests a rationale: simplification in the articulatory movements. A given phone is replaced by one which resembles the phones that precede or follow (not necessarily immediately) or which for some anatomical reason combine more easily with surrounding phones or represent a less taxing combination of distinctive features.

Even early discussions acknowledge that not all change involves reduction of articulatory effort, however. Sievers (1881: 196–197) opens his section on sound change by attacking the notion, concluding that ease of articulation, if viable at all, must be constrained. For instance, note that reduction of articulatory effort in one realm (V-to-V articulation) may lead to greater complexity elsewhere (the creation of vowels produced with both frontness and lip rounding). Historical processes that lead to new synchronic alternations by definition increase the complexity of the overall phonology, and beyond phonology they often obscure connections among words in paradigms or derivation. In Old English, some nominal classes showed alternations like the following between singular and plural in two key cases, where the final *-s* was ‘voiceless’ or fortis.

(5) English plural alternations

Old English		Modern English	
NOM/ACC.SG	NOM/ACC.PL	SG	PL
stān	stānas	stone	stone[z]
eṅgel	eṅglas	angel	angel[z]
ġiest	ġiestas	guest	guest[s]
sċip	sċipu	ship	ship[s]

The unstressed vowels of the plural were lost, and the *s*-plural spread to words like *ship*. A progressive laryngeal assimilation (‘voice’) led to the sharing of such features within clusters, creating the final *s/z* alternations we know today.

Ease of articulation accounts are often built on intuitive notions of speech production, while actual articulatory phonetic data can show remarkable complexity. For example, in areas of the United States including much of Wisconsin

and Minnesota, a recent change has raised /æ/ before /g/, so that words like *bag*, *lag*, *tag* are pronounced with vowels in or near the range of [e:] or [ɛ]. The last line of Labov et al. (2006) declares prevelar raising (as it is known) ‘unexpected’ and to demand ‘a further accounting’ (p. 305, section 7). This has often and informally been reckoned to be assimilation, where the low front vowel was drawn upward by the following velar stop, acoustically creating an ‘exaggerated velar pinch’ (Baker et al. 2008: 64), i.e., raising the vowel’s second formant (F2) and lowering its first (F1). Thus it moves the vowel closer to /e:/ in the vowel space. The limitation to /g/ but not /k/ might be explicable by the greater vowel duration before the lenis than the fortis stop, giving more time for coarticulatory tongue raising. However, Purnell (2008) uses X-ray microbeam data to show that prevelar raisers use more lip rounding in producing /g/ compared to /k/. This gesture lengthens the vocal tract and helps contribute to an acoustic impression of raising (again with raised F2 and lowered F1), and it also correlates with a more forward tongue position. Bauer and Parker (forthcoming) further show, using ultrasound data, that the larynx is lower in the production of /g/ than /k/, which also lengthens the vocal tract. In short, a palette of articulatory gestures, sometimes quite effortful and certainly different from an intuitive articulatory account, are used by prevelar raising speakers to create the acoustic cues of a raised /æ/ before /g/. Such application of speech science tools to problems in sound change provides one of the most promising avenues for fundamental progress in this field.

Segmental assimilation remains a central topic in historical phonology, and articulation is still invoked in sound change, but over time much focus has shifted toward the third ‘big question,’ the sound shapes of syllables and larger units, and the role of universals of some sort in constraining sound change.

3. Syllable-Based Change and Preference Laws

Another prominent type of sound change is lenition (or weakening) alongside its counterpart, fortition (or strengthening). Lenition tends to follow a restricted number of paths, and Hock (1991: 80–86) proposes a lenition hierarchy, a few trajectories running from voiceless geminate stops, the ‘strongest’ segments, to [h], [ʔ], or Ø, including loss of occlusion (spirantization), voicing, loss of friction (sonorization).⁸

Like assimilation, lenition invites appeal to arguments about effort reduction, but linguists have long recognized that lenition correlates with prosody. Notably, syllable structure shows dramatic asymmetries: onsets tend to strengthen; codas tend to weaken.⁹ For instance, Spanish imposed new restrictions vis-à-vis Latin on word-final consonants (Penny 1991: 74–75):

(6) Coda loss in Spanish

	Latin	Spanish	
a.	illic	allí	'there'
	dīc	di	'say.IMPER.'
	nec	ni	'neither'
	ad	a	'to'
	aliquod	algo	'something'
b.	pede	pie	'foot'
	fide	fe	'faith'

The forms in (a) show loss of coda /k/ and /d/; (b) shows the latter pattern extended to new final *d* forms created by apocope. In the history of French, codas have likewise disappeared, often leaving contrastive segmental traces, such as phonemic nasalization on vowels (Gess 1999). Historical codas in many Southeast Asian languages have also disappeared, leaving tonal distinctions, where voiceless codas triggered the creation of high tones and voiced ones low tones (see the Tibeto-Burman data treated in Chapter 7 in this volume).

Languages likewise often strengthen syllable onsets. Vennemann (1988: 50–53) illustrates this with word-initial glide strengthening, to fricatives in German and sometimes to stops or affricates in Italian (mostly in words of Germanic origin):

(7) Glide strengthening

German	/ja:r/	>	/jar/ <i>Jahr</i> 'year'
	/wal/	>	/val/ <i>Wall</i> 'bulwark'
Italian	januarius	>	gennaio [dʒ] 'January'
	wadan	>	guad(are) [g ^w] 'to wade through'
	triuwa	>	trégua 'truce'

Medially, we find Latin *dol.eō* 'I hurt' realized in Italian as *dol.go* (via a stage with a glide onset) and Middle High German *var.we* 'color' becoming Modern German *Far.be*. Some Highland Mixtec languages show regular foot-initial development of glides into fricatives — *j > /ʒ/ — and into stops — *w > /b/, while syllable-initial but foot-medial sounds weaken (Macken and Salmons 1997). These patterns show the applicability of Vennemannian patterns to the foot rather than the syllable.

Vennemann (1988) proposes 'preference laws' to account for such patterns. He conceives of sound change as 'improvement,' where the above changes improve syllable structure, bring it more closely into line with the familiar CV template, a simple low sonority onset and a simple high sonority nucleus

without a coda. As noted, however, these represent tendencies, not absolutes and Vennemann (1988: 1–2) is well aware that changes can also worsen syllable structure:¹⁰

Every change in a language system is a local improvement, i.e. an improvement relative to a certain parameter. For instance, every syllable structure change is an improvement of syllable structure as defined by some preference law for syllable structure. If a change worsens syllable structure, it is not a syllable structure change, by which I mean a change motivated by syllable structure, but a change on some other parameter which merely happens also to affect syllable structure.

Syllable-worsening changes lie, then, beyond the scope of Vennemann’s theory, but they occur widely. First, stops can emerge from or following vowels or glides, even in codas. Mortensen (manuscript) brings together a broad set of such cases and shows them to be more widespread and systematic than previously recognized, exemplified below:

(8) Reflexes of Proto-Tibeto-Burman *-əy and *-əw in Burmish languages.

Proto-T-B	Written Burmese	Zaiwa	Maru ₁	Maru ₂	
*səy	se	šī	šit	sik	‘die’
*krəy	khre	khyí	khyit	khyik	‘leg/foot’
*rəy	re	—	γit	γək	‘water’
*gyəy	kyê	jì	jit	—	‘parrot’
*kləy	khyê	khyì	khyít	khyík	‘dung’
*krəw	khruì	khyúi	khyùk	khyùk	‘horn’

Some Written Burmese forms follow the preference laws, losing coda glides to yield open syllables. The two varieties of Maru shown, though, have created voiceless stop codas. In fact, we do not need to go to the Himalayas to find closely related patterns. Consider these German (Thuringian) dialect data:

(9) Excrescent word-final *-b*, Buttelsestedt (Kürsten and Bremer 1910)

Buttelsestedt	Standard German	
khāmṇ ~ khāmb	kamen ~ kam	‘they came, he/she/it came’
khīmb	kāme	‘he/she/it would come’
nāme ~ nīmb	nehmen ~ nähme	‘to take, he/she/it would take’

In these forms, historically nasal-final words have developed final obstruents, again counter to claimed universal preferences for syllable/word structure.

Mortensen proposes a perceptual account of the Tibeto-Burman facts (section 5), while Smith and Salmons (2008) argue that Thuringian epenthetic stops mark right edges. In other words, in those analyses, while these changes may violate syllable-level preferences, they may serve to satisfy other, higher level prosodic structures.

Second, weakening occurs in strong prosodic positions. Most striking is perhaps the ‘complete loss of all initial consonants’ in the Arandic languages (Australia, Koch 2004: 138). Similar patterns, often with particular initial consonants, are found elsewhere in Australia (2004: 135), and Koch sees Arandic as having fully generalized that process. While left edges of words are in a sense inherently prominent positions, these languages have shifted stress from initial to second position (2004: 137), which may help account for the change, although stress shift is not found in other languages with limited loss.

Once again, similar examples of the same point can be found on turf more familiar to many historical linguists. In the Goidelic branch of Celtic, old word-initial *p was lost in a language with initial stress. In Germanic, the reflexes of Indo-European *k were originally presumably voiceless velar fricatives, which weaken to [h], in mostly stressed syllables. Some varieties of English have deleted even that, again including in stressed initial position.

Vennemann builds his approach on universals, but anchors it in function and phonetics rather than generative Universal Grammar.¹¹ Syllable preference laws ‘have their basis in the human productive and perceptive phonetic endowment. They . . . would be derivable—and thus explained—in a sufficiently rich phonetic theory’ (1988: 4). Like ‘ease of articulation,’ preference laws are grounded in phonetics. In contrast, in generative historical phonology, UG constrains sound change. Let us now consider another syllable-related process, laryngeal neutralization, and how it is interpreted within that framework.

4. Coda Neutralization and Universal Constraints on Change

Sound change does not simply eliminate segments from certain positions, of course, but also eliminates particular features. Widely attested are processes which neutralize laryngeal distinctions in syllable codas or word-final position. The type most familiar to many is final devoicing. In the classic situation, voiced and voiceless obstruents contrast in syllable onsets but not in codas, where only the latter can appear. Consider these West Frisian examples, where the change is recent:

- (10) West Frisian final devoicing
 dei ‘day’ ≠ tei ‘thaw’
 graet ‘fishbone’ = graed ‘degree,’ both [gra:t]

Such changes have arisen time and again independently across the world's languages (Blevins 2004, 2006), including where the process is limited to phrase- or word-final position, which suggests a path along which neutralization develops.

Kiparsky (2008: 46) argues forcefully that 'universals constrain change' in such cases. His view . . .

locates the neutralization constraint in the design of language.

This does not mean that coda neutralization applies in all languages; it just means that, whenever it does apply, it always imposes the unmarked feature value. It can be decomposed into two separate constraints. One says that onsets have at least as many place and manner contrasts as codas; which is really a special case of a family of constraints which differentiate between strong and weak positions. The other says that neutralized features assume their unmarked value (voicelessness, in the case at hand).

That is, Kiparsky understands our endowment for language as licensing contrasts in onsets over codas and mandating that neutralization between contrasts go unmarked. This may be anchored in an already-familiar view, namely 'the greater economy of the relevant articulatory gestures. More effortful articulations would be used in positions where a contrast must be marked.' Here, and in the two following sections, we see the role of language acquisition coming to the fore in the study of sound change, in particular the discontinuity between generations, as each learner builds their own grammar from linguistic input, in line with the human cognitive capacity for language. Kiparsky argues that 'the learner in addition selectively intervenes in the data, favoring those variants which best conform to the language's system. Variants which contravene language-specific structure principles will be hard to learn, and so will have less chance of being incorporated into the system' (1995: 328, see Hale 2003 for another view). Other work today treats transmission as 'vernacular reorganization' (Labov 2001: 415), how 'children learn to talk differently from' their primary caregivers. This gives a more prominent role to social identity (Chapter 19 in this volume) well beyond the initial phase of language acquisition, and indeed other work has begun to explore changes that can occur over the lifespan (e.g., Sankoff and Blondeau 2008).

Returning to the empirical question at hand, consider now a fuller typology, illustrated here with synchronic reflections of historical change (Iverson and Salmons 2006: 210 and Iverson and Salmons forthcoming, using 'spread' for [spread glottis] or aspiration):

(11) Typology of final laryngeal neutralization

- a. Final devoicing: /d, t/ → [t] (Dutch, Polish, Turkish, Maltese)

d] _σ	Phonemic contrast:	/d/	/t/
‡			
[voice]		[voice]	[]

- b. Final voicing: /d, t/ → [d] (Lezgian, perhaps others)

t] _σ	Phonemic contrast:	/d/	/t/
↑			
[voice]		[voice]	[]

- c. Final lenition: /t
- ^h
- , t~d̥/ → [t] (Korean; with final devoicing as well in Sanskrit, Thai)

t ^h] _σ	Phonemic contrast:	/t ^h /	/t/ (or /d̥/)
‡			
[spread]		[spread]	[]

- d. Final fortition: /t
- ^h
- , t~d̥/ → [t
- ^h
-] (German, Kashmiri, Washo)

t] _σ	Phonemic contrast:	/t ^h /	/t/ (or /d̥/)
↑			
[spread]		[spread]	[]

This shows that Kiparsky's second constraint, mandating neutralization to unmarked members of contrasts, is simply incorrect. Rules like 'Coda Aspiration' in Kashaya (Pomo) are familiar from the literature (Buckley 1994: 87–88), illustrated with palatal *c*:

(12) Kashaya coda aspiration

/s'uwac-i/	→	s'uwaci	'dry it!.SG'
/s'uwac-me-?/	→	s'uwac ^h me?	'dry it!.FORMAL'

An underlying 'plain' (laryngeally unmarked) stop becomes 'aspirated phonologically, and not simply subject to some rule of obligatory final release at the phonetic level' (1994: 88).

This obviously does not vitiate the correctness of a universalist position, but the particular proposed characteristic of UG is not tenable. In a similar spirit, one current view, to which we turn now, argues generally that approaches like Kiparsky's posit too much universal machinery.

5. Metathesis, Dissimilation and Perception

Some patterns of sound change are distinctly non-assimilatory, such as metathesis and dissimilation. Consider these examples. First, Dahl's Law in Bantu (Teil-Dautrey 2008) describes how, when two adjacent syllables begin with voiceless stops, the first becomes voiced, as in the reflexes shown in this Kikuyu pair involving the diminutive prefix *ka-*:

- (13) Dahl's Law reflexes in Kikuyu
/ka-βori/ → [ka-βori] 'small goat'
/ka-ko/ → [ya-ko] 'small piece of wood for burning'

Second, Spanish has undergone various metatheses, including the inversion of /rj/ and /pj/ sequences (Penny 1991: 56, 96):

- (14) Spanish glide metathesis
CAPIAM > *quepa* 3.SG.PRES. of *caber* 'to fit'
FERRĀRIU > *ferrero* 'blacksmith,' Spanish *herrero*

Ohalá (1981, 2003, elsewhere) accounts for most sound changes as perceptual 'hypocorrection' or 'hypercorrection.' Listeners almost always correctly perceive utterances, in part by normalizing or correcting the signal by factoring in contextual effects. Hypocorrection happens when a listener mishears a signal and interprets it without those 'corrective strategies' (as with assimilation); hypercorrection occurs when the listener hears the signal correctly to begin with but incorrectly applies those strategies. Ohalá sees dissimilation and metathesis as the latter. For instance, dissimilation often appears with segments that spread acoustically over a longer stretch of sound, like aspiration. That creates ambiguity for the listener as to where the feature was located in the signal, so that they may 'move' it to another segment perceptually. Indeed, Dahl's Law is often traced to a time when the voiceless stops of Bantu were aspirated, making it in effect deaspiration of the initial stop, perhaps parallel to Grassmann's Law in Indo-European (but see Collinge 1985: 47–61, 279–281). Blevins and Garrett (1998, 2004) build similar arguments about metathesis, and provide a valuable crosslinguistic survey. A perceptual hypercorrection analysis of such changes is attractive, but is not the only factor at play: Teil-Dautrey (2008) shows that Dahl's Law helps to fill phonotactic gaps in Proto-Bantu root structure.

Today, the role of listeners has become a battle cry in phonetics and phonology, including historical phonology. Ohalá expressly rejects the approaches outlined above: Sound change

'does not serve any purpose. It does not improve anything. It does not make speech easier to pronounce, easier to hear, or easier to process or

store in the speaker's brain. It is simply the result of an inadvertent error on the part of the listener' (2003: 683).

This perceptual perspective has been developed into a full-blown theory of sound change by Blevins (2004: 33–34), layering three elements:¹²

- Misperception, where listeners mistake a sound or utterance for a similar-sounding one;
- Reinterpretation, where listeners associate an intrinsically ambiguous signal with a different phonological form than the speaker;
- Selection from phonetic variants, where listeners build a representation on an occurring variant that differs from the speaker's representation.

Blevins argues (2004: 23) that her program explains sound change, and most synchronic phonology:

Principled diachronic explanations for sound patterns have priority over competing synchronic explanations unless independent evidence demonstrates, beyond reasonable doubt, that a synchronic account is warranted.

Going farther, some scholars deny that abstract phonological categories even exist, like Bybee (2001). A more tenable position would include a robust role for history in synchronic explanation and a substantive role for abstract structure in understanding sound change. (See Bermúdez-Otero (2006) and Good (2008) for related views.)

Note finally that metathesis and dissimilation provide a wrinkle for the regularity of sound change. Early work regarded them as lacking clear explanation (Sievers 1881: 212, Bloomfield 1933: 390), and current textbooks note their sporadic character (Campbell 1999: 39, Hock 1991: 110). Challenges to regularity continue down to the present, most importantly in the notion of 'lexical diffusion' (Phillips 2006), which holds that the word rather than the sound is the 'unit of sound change.'

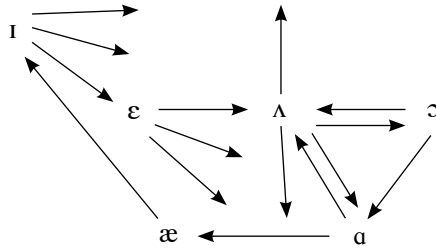
6. Chain Shifting and Sound Change in Progress

Our final type of sound change brings us back to the first example given above in section 1. Grimm's Law not only changed all segments containing particular featural configurations (voiceless stops, say), but involved consistent changes across series of consonants—different manners of stops. Despite the notoriety

of this particular change, consonantal chain shifts are uncommon, but vocalic chain shifts quite widespread.

Sievers (1881) observed clear trends in chain shifting, e.g. that long/tense vowels rise and short/lax ones lower. These have been examined in detail by Labov (1994), where the just-noted patterns are labeled Principles I and II, respectively, while Principle III covers the tendency of back vowels to move to the front. Principles I and III are richly attested in the historical literature, I in the Great Vowel Shift of English for instance, while parts of II are found in a change underway today, the Northern Cities Shift in urban areas along the Great Lakes. It is usually portrayed as zigzag movements, including downward movement of lax vowels, but the figure below shows the range of variants among Gordon's Michigan speakers (2001:197).

(15) Northern Cities Shift (with variants from Gordon 2001)



Vowels differ in the degree of shift by consonantal context. For instance, /æ/-raising is promoted most by a following coronal, like /d/, and inhibited by following velars, like /g/. But on the western edge of the shift, we find prevelar raising (section 2), while coronal environments lag. Many speakers there appear to show only /æ/ raising, not the full chain. More importantly, the chain metaphor requires the connectedness of movements, e.g. that /æ/ raising, qua first step, pulls /a/ in its wake and in turn /ɔ/. In western Wisconsin and Minnesota, though, we find speakers who raise /æ/, yet participate in the 'low-back merger' of /a/ ~ /ɔ/. All this suggests that these changes may not be part of the Northern Cities Shift but rather similar-looking and perhaps historical related changes. Fine-grained data like these reveal new complexities, even for a meticulously documented change underway at present.

7. The 'Life Cycle of Sound Change'

Sound change is not neatly constrained,¹³ yet there is tremendous unity in phonological change. For over a century, sound change has been described as going

through a ‘life cycle,’ a view again much in discussion recently, e.g. Kiparsky 2003, Iverson and Salmons 2003, Bermúdez-Otero 2007 and Janda and Joseph’s related ‘Big Bang’ (2003a, elsewhere). Such proposals vary considerably, but basic elements draw together the topics treated above:¹⁴

1. Coarticulation and other articulatory factors (cf. section 2 and section 3) introduce new synchronic variants into the pool of speech (section 6).
2. As learners (section 4) and listeners (section 5), we build generalizations based on those variants, constrained by our cognitive abilities. This often turns phonetic patterns into phonological ones.
3. Phonological patterns feed morphological alternations, and as ‘active’ phonological processes fade, they may be adjusted to fit paradigms, in analogical or other realignments (see Chapter 8 in this volume).

In a sense underlying the life cycle is the notion that phonetic and phonological patterns are constantly reinterpreted, negotiated and generalized by each generation of learners, speakers and listeners. The difficulties outlined in the preceding sections make more sense when viewed through this historical lens, particularly if we consider the long arc that often precedes ‘completion.’ Clean-looking end products may obscure the complex and slow developments involved. T. Andersen (2006) compares two closely related Western Nilotic languages, Jumjum and Mayak. Both languages contrast vowels by the feature [ATR] (advanced tongue root), but cognates show a featural reversal in high vowels: Jumjum [+ATR] vowels (/i, u/) correspond to Mayak [-ATR] vowels (/ɪ, ʊ/) and vice versa.

(16) ATR reversal in Jumjum

	Jumjum		Mayak	
/ii/	wiil	/ɪɪ/	wɪɪl	“tail”
/uu/	búuy	/ʊʊ/	bʊʊr	“shoulder”
/ɪɪ/	pîik	/ii/	pii	“water”
/ʊʊ/	lùum	/uu/	luum	“grass”

Andersen successfully accounts for this by a string of carefully ordered steps (2006: 26):

Proto-Western Nilotic [+ATR] */i/ and */u/ shifted to and merged with [+ATR] */e/ and */o/, probably via diphthongization to */ie/ and */uo/. Next Proto-Western Nilotic [-ATR] */ɪ/ and */ʊ/ changed to [+ATR] /i/ and /u/, thus filling up the space left by the lowering of */i/ and */u/. Finally, [+ATR]

**/e/ and */o/, now subsuming original */i/ and */u/, shifted to [-ATR] /i/ and /u/. As a result of this sequence of changes in pre-Jumjum, the high [-ATR] vowels of Proto-Western Nilotic have become high [+ATR] vowels in Jumjum, and high [+ATR] vowels of Proto-Western Nilotic have become high [-ATR] vowels in Jumjum.*

Complex derivation may raise red flags in synchronic phonology, but phonological change often results from exactly that.¹⁵

8. Conclusion

This chapter has surveyed a range of types of sound change and approaches to understanding them. Improving articulatory, acoustic and perceptual evidence, computational modeling and other tools are rapidly sharpening that understanding. A major limit remains empirical, e.g. lack of a solid empirical basis for claims about what is more or less common. Claims may reflect the histories of familiar languages, so that Romance coda loss is ‘normal,’ while Tibeto-Burman excrement stops are ‘exotic.’ Efforts are underway to address this, like the Diachronic Data & Models database, Ben Hamed and Flavier (2009, <http://www.diadm.ish-lyon.cnrs.fr/>), and a similar project at the Max Planck Institute in Leipzig.

The foregoing also illustrates familiar pendulum swings of linguistic theory. In phonology and sound change, we often suffer under a kind of compulsive parsimony. Sober (2006) writes that ‘theories are parsimonious when they are tightfisted with respect to the entities, processes, or events they postulate.’ Mark Twain quipped, ‘To a man with a hammer, everything looks like a nail.’ Most theories to date appear to be too tightfisted, attempting to account for (virtually) all sound change with one entity or process: ease of articulation, abstract phonological structure, prosodic structure, perception, or social motivations. What may be needed is a more nuanced understanding of the roles each plays and how they interact. This offers greater opportunities for progress than with pleading for any single-tool view.

Notes

1. I thank the following for discussions on this topic or comments on earlier versions, in addition to the editors: Greg Iverson, Monica Macaulay, David Mortensen, Tom Purnell, Eric Raimy and Laura Smith. The usual disclaimers apply. Honeybone and Salmons (forthcoming) will provide a far more detailed treatment of phonological change.

2. This list draws inspiration from Goldsmith's 1995 discussion of synchronic phonological theory.
3. The terms 'law' and 'shift' date to this period, and survive especially in names of particular changes, like Grimm's Law and the Great Vowel Shift.
4. The formulations are Rask's originals given in Lehmann's translation (see references).
5. Laryngeal features are those that refer to states of the glottis—most notably voicing and aspiration for the exposition below. Throughout I follow 'laryngeal realism' as outlined by Iverson and Salmons (1995) and many others, distinguishing 'voice' languages from 'aspiration' or fortis/lenis languages.
6. The full set of laryngeal feature assimilations in Indo-European and its daughters is far more complex.
7. Whether [x] and [ç] contrast in German is not immediately relevant.
8. For recent phonological work on historical lenition, see Honeybone (2001, 2005, forthcoming) and Holsinger (2000, 2008).
9. The same pattern holds at levels higher on the prosodic hierarchy as well, especially the foot and the phonological word.
10. It has been observed that this formulation risks circularity.
11. Vennemann's preference laws in many ways anticipate the 'violable constraint ranking' of Optimality Theory.
12. These are my terms for and characterizations of what Blevins calls *CHANGE*, *CHANCE* and *CHOICE*, respectively.
13. The 'hard' limits on what segments can become, what other segments are few or nonexistent, provided we have enough crosslinguistic data and consider changes at a considerable time depth. Blust (2005), for instance, catalogues a set of 'bizarre sound changes' from Austronesian.
14. Bermúdez-Otero (2007: 503–504) observes that modular views of grammar—distinguishing a phonetic component of grammar from a phonological one—'provide a perspicuous interpretation' of the life cycle.
15. At the same time, the chronology of the unfolding of some changes may go faster than traditionally believed. Gess (1999) compresses the French coda losses mentioned at the outset from ten–eleven centuries down to two or three.

7 Suprasegmental and Prosodic Historical Phonology

Hans Henrich Hock

Chapter Overview

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1. Introduction

In addition to changes in segmental structure, languages can undergo changes in suprasegmental properties, such as tone and accent, as well as in other aspects of prosodic structure (such as prosodic phrasing and its effects).

One major problem in dealing with suprasegmental changes is that the distinction between tone, pitch accent and stress accent is not always clear (McCawley 1970). There are prototypical tone languages, such as Chinese, with monosyllabic morphemes each of which is characterized for tone (or no tone, for clitics). But there are also languages such as Panjabi, with 'word tones,' i.e., with two or more contrastive accents, differing in pitch contour. There is also the issue of what distinguishes languages with pitch accent from those with stress accent, since the stress accent of languages like English is not only defined by loudness or weight, but also by pitch contour.

This chapter does not attempt to develop definitions that permit clear-cut distinctions between these phenomena. Rather, it is to outline various developments that give rise to changes in them.

Similarly, the discussion of prosodic phrasing and its effects is not intended to provide a theory of prosody (on this issue see the foundational publications of Selkirk 1984 and Nespor and Vogel 1986). Rather, I focus on changes in prosodic structure or conditioned by it.

2. Tonogenesis and Related Phenomena

A widely discussed type of suprasegmental change is tonogenesis, the development of tonal contrasts where there were none before or the development of additional contrasts in tone languages.¹ (For a good survey of research in this area, see Abramson 2004.)

Most commonly tonogenesis is attributed to the difference in F_0 effects between voiced and voiceless consonants, with voiced consonants lowering F_0 and voiceless ones raising it. As long as the difference is predictable, it remains allotonic; but if voicing distinctions are lost or become otherwise opaque, it becomes contrastive, as in the following example from Tibeto-Burman Jingpho (Maran 1971).

(1) Eastern dialect	Southern dialect
láh	lá
làfi	là
la	la

Abramson (2004) plausibly argues that the phonetic basis for this distinction lies in greater glottal tension for voiceless consonants, and reduced tension for voiced ones. Note that non-contrastively voiced consonants, such as sonorants, do not seem to significantly lower F_0 .

A very different view, proposed by Thurgood (2002), holds that differences in phonation type, such as modal voicing vs. breathy voice or creaky voice, lie at the root of tonogenesis, with breathy voice considered a common transition after voiced stops.

Abramson's account has the advantage that it provides an explanation in principle for the Baltic-Slavic differences in pitch accent resulting from differences in vowel length, as in (2), since long vowels crosslinguistically tend to be more tense than short vowels. The major problem is that the phonetic details of the change(s) are obscure, since the different languages involved do not agree on the nature of the resulting pitch contours. (Note that coda sonorants are tone- and mora-bearing.)

(2) pre-BS	* <i>wornos</i>	Lith.	<i>vaînas</i> [vaînas] 'crow.m'
vs.	* <i>wōrnā</i>		<i>várna</i> [várna] 'crow.f.'

Thurgood's claim runs into the difficulty that there are languages which contrast simple voiced stops with voiced stops with breathy release ('voiceless aspirates'). If possible, the claim should be tested against languages that have such a contrast and have undergone tonogenesis. The case of Panjabi suggests that there is a difference between the stop classes, in that only a change in the voiced aspirates leads to tonogenesis; see (3) and Purcell et al. 1978. Moreover, the different behavior can be correlated to the fact that in the closely related Hindi, voiced aspirates are accompanied by significantly lower F_0 than plain voiced stops (Dutta 2007).²

- (3) a. ghar > kàr 'house'
 b. lābh > l'āp 'profit'

Some scholars claim that developments like this are rare and are either limited to languages with established tonal contrast or are introduced through contact with such languages (e.g. Kiparsky 1995/2003). However, tonogenesis has been observed in languages that do not meet this description (Hale 2003 with references). Moreover, the claim would seem to entail the undesirable assumption that, instead of monogenesis, there were at least two different origins of language, one with tonal contrast, the other without.

Tonogenesis (in the larger sense) can come about by a number of other developments (see Hock 1991). These include vowel contraction, with preservation of pitch contours (4a), and loss of segments, with preservation and reattachment of their prosodic properties (4b). In (4a), contraction of the accented suffix vowel $-á-$ with the unaccented vowel $-à-$ of the ending introduces a long vowel with falling pitch (marked \hat{a}); and by polarization, the level pitch on the original long vowel $-á-$ acquires a rising pitch. For (4b) note that, like most modern South Asian languages, Vedic Sanskrit had a pitch accent with a low-high melody, with the high pitch of the accented syllable tending to extend into the next syllable, producing a falling pitch on that syllable (here marked by a grave accent). Morphologically conditioned loss of accented high vowels before homorganic glides makes that falling pitch unpredictable and hence contrastive. (See section 3 for similar effects of accent shift).³

- (4) a. Greek *bhugá-às > *bhugâs (> phugês) 'flight.GEN.SG.'
 vs. *bhugá = *bhugá (> phugê) 'flight.NOM.SG.'
 b. Vedic *vrkíyàs > vrkyàs 'she-wolf.GEN.SG.'
 vs. *rāyás = rāyás 'wealth.GEN.SG.'

Finally, as noted in Hock 1986a, trimoraic length, resulting from compensatory lengthening, may lead to tonal differences, as in (5), where 3 indicates trimoracity. In (5a), from northern German, the resulting vowel has a long falling tone;

but in (5b) from Rhenish Franconian, the original trimoraic vowel receives a rapidly falling pitch accompanied by a glottal catch (or glottalization),⁴ in addition to being shortened to half-length.

- (5) a. *sprēkə 'I speak'
 sprē̃3k
 b. hūs hūsə 'house.NOM./DAT.SG.'
 hūs hūs3s
 hūs hū̃·s

3. Prosodic Finality and Accent Retraction

A number of languages exhibit accent retraction from the final syllable or mora; and in some languages the retraction is extended to other contexts, potentially leading to initial accent. As argued in Hock (1999) (with references), the ultimate cause for the change lies in the incompatibility of word-final lexical pitch prominence and the low tone of unmarked utterance-final intonation. An excellent example is found in Serbo-Croatian, whose general accent retraction can be traced back to an earlier prepausal mora retraction, preserved in geographically marginal Čakavian dialects; see (6) and Becker (1979). As the case of *vodá* > *vòda* vs. *vódu* > *vòdu* in (6d) shows, one result of generalized accent retraction is the creation of new pitch contour contrasts in accented syllables.

- (6) a. Čakavian krāl̃Y = [kraál̃Y] 'king'
 b. Čakav. dial. krāl̃Y = [kraál̃Y] / ___ ##
 krāl̃Y = [kraál̃Y] elsewhere
 c. Štokavian krāl̃Y = [kraál̃Y]
 d. vodá > vòda 'water.sg' (N)
 vódu > vòdu 'water.sg' (A)

In Hock (1999), I further argue that accentual developments of this sort are comparable to the common phenomenon of segmental loss in final syllables. Example (7), from Lithuanian dialects, supports this claim, in so far as one variety of dialects simply has accent shift (7a), while the other has both apocope and accent reassignment to the nearest available preceding mora (7b). (See Stang 1966: 116–117, 167, 170, Senn 1966: 51, 96, 110, both with references) The latter change is commonly assumed to involve an intermediate stage with segmental loss plus 'Floating' pitch.⁵

- (7) a. Accent retraction without apocope
 manè [mané] 'me.ACC.SG' > mǎnè [mánè]

b. Apocope and accent retraction

manè [mané] 'me.ACC.SG' > mañ [mañ]

Two further points are interesting. First, the effects of accent retraction become more general in northern dialects, with Latvian, yet further to the north, showing complete accent attraction to the first syllable. (The initial accent of Latvian, however, is usually attributed to contact with Uralic.)

Second, in the case of accent retraction with apocope, we find that even the loss of unaccented vowels leads to a change in pitch properties of preceding syllables, as in (8c). This can either be explained as an example of generalized accent retraction or as a case of preservation of the earlier high-low melody by shifting it to the left; see (8d).

(8) c. gēras [geéras] > gérs [géers] 'good.NOM.SG'

d. [geéras] > [géers]

Because verbs tend to be less prominent in context than nouns, the cross-linguistic tendency to avoid utterance-final prosodic prominence can have special effects in SOV languages, since verbs are utterance-final in canonical order (Ladd 1996).⁶

Klein (1992) draws on this tendency to explain the fact that Vedic Sanskrit finite verbs in main clauses are unaccented (except if initial in their clause), by assuming that accent loss originated in canonical utterance-final position. Hock (1999) adds comparative evidence from Modern Persian to support this account.

Accent retraction is of general importance because it provides an explanation in principle for the common pattern of penult accent (presumably reflecting accent retraction due to avoidance of utterance-final prosodic prominence), as well as of initial accent (presumably resulting from generalized accent retraction). Interestingly, although utterance-final prosody may thus be responsible for penult accentuation, the fact that it can also trigger segmental loss can reintroduce final accentuation (as in the case of the changes from Latin to French).

4. Accent Protraction

Interestingly, protraction—the logical opposite of retraction—seems to be less commonly attested, and so does the phenomenon of what might be called pen-ant accent (for the latter see Hyman 1977).

Two major processes that introduce pen-ant accent have been recognized in the literature. One is accent shift 'by weight' (i.e. distinctive or allophonic length), with accent protraction from light vowels in initial syllable to heavy

vowels in the second syllable (see Hayes 1995); the other, common in African languages and involving tones (see Chen and Kisseberth 1979), is usually accounted for as high-tone doubling, followed by loss of the first high tone as a result of the OCP (for which see section 4).

As far as the accent shift by weight is concerned, one suspects that it takes place in languages with low-high accent melody and is triggered by the tendency in such languages for the high pitch to spill over into the next syllable (see §1 above). In languages like Hindi, for instance, the final high pitch on accented short vowels tends to spill over into following syllables with long vowel.

In fact, the history of Vedic Sanskrit furnishes evidence for just such an accent protraction (except that it operates on a language in which the primary accent is not confined to the first syllable). See Cardona (1993) and example (9), where italics indicates the low(est) pitch preceding the high pitch, acute = main accent, grave = falling pitch on the next syllable, circumflex = high-falling pitch that starts higher than the preceding high pitch of the main accent. Crucially, at some intermediate stage, the higher starting pitch of the post-accent syllable is reinterpreted as the main accent (9c), and the subsequent shift of the low(est) pitch in (9d) serves to maintain (or reintroduce) the initial low of the low-high accent melody.⁷

(9) a. Earliest pattern	agnínā	[agnín`ā]
b. Rig-Vedic	agnínā	[agnín^ā]
c. Intermediate stage	agniná	[agnin'ā]
d. Reassertion of LH	agniná	[agnin'ā]

Just as generalized accent retraction may lead to initial accent, so generalized protraction may be speculated to potentially lead to final accent (see Hock 1999: §3 with references).

5. Avoidance of Prominence Clash (the OCP)

Since at least the time of Leben (1973), a cross-linguistic tendency to avoid stress or tone clash in neighboring syllables has been recognized, a tendency which has come to be known as the Obligatory Contour Principle (OCP). An example from Modern Lithuanian is given in (10), where accent clash is avoided by leftward movement of the first accent.

(10) šėšiàs dėšimtis > šėšias dėšimtis '16.ACC.FEM.'

As noted earlier, this principle has been invoked as being partly responsible for tone protraction in African languages. It can also be held responsible for the

widespread tendency to have alternating-stress or accent patterns, a phenomenon especially common for secondary stress.

6. Phrasal Prosody and Linguistic Change

As noted earlier, utterance-finality can be responsible for accent retraction (both limited to the penult and generalized), as well as accent loss (in Vedic).

The prosodic organization of utterances may likewise be relevant for the crosslinguistic tendency to place clitics (and other light elements) in second position ('Wackernagel's Law'), in so far as 'second position' may be prosodically defined, as in the following example from Modern Serbo-Croatian (see Radanović-Kocić 1988, 1996), where the second-position clitics line up after the first accented word of the prosodic phrase in which they originate, and not after the first word of the clause (which would be ungrammatical).

- (11) Ja | tvoja mama | obečala **sam** **ti** igračku
I your Mom promised AUX.1SG.CLIT. you.SG.CLIT. toy
'I, your Mom, promised you a toy.'

In fact, cliticization itself is best defined prosodically (as involving reduced prosodic prominence); and as is well known, cliticization commonly involves loss of prosodic prominence or, in the case of tone languages, the possibility of floating tones (see note 5).

In Hock (1996b) I therefore have made the strong claim that cliticization and Wackernagel's Law start out as prosodic phenomena and that, where they seem to be syntactic (as in the case of languages where second position can be syntactically defined), this is the result of secondary reinterpretation and generalization. Moreover, it has been claimed that the syntactic phenomenon of V2, i.e. the positioning of finite verbs in clause-second position, begins as a Wackernagel's-Law movement of clitic verbs to second position (see Hock 1982, Harris and Campbell 1995: 215–216).⁸

Notes

1. This discussion focuses on tonal phenomena characterizable in terms of pitch. For 'register' systems with differences in phonation type (breathy vs. creaky voice), see Thurgood 2002 with references.
2. At the same time, Thurgood's account works well for languages such as Vietnamese, where tone arises from earlier 'register' differences.
3. Similar developments may have led to the 'tonal' accent distinctions of Norwegian and Swedish (Hock 1986a/1991; but see also Riad 1998).

4. Hock (1986/1991) speculates that the glottal catch results 'from the fact that the intonational contour of the earlier overlong vowel is "mapped" onto the shortened vowel and in the process gets condensed and distorted.' Gussenhoven's account (2000) is very different, postulating a preventive analogical change, creating 'fake long vowels.'
5. Floating tones are a common phenomenon in African languages and in Chinese, where they seem to result from the loss of the segmental properties of clitics. See e.g. Wong (1979).
6. Ladd refers to apparent counterevidence in Bengali (see Hayes and Lahiri 1991); but Dutta and Hock (2006) show that Bengali is no exception to this tendency.
7. The example is slightly simplified for ease of exposition.
8. Syntacticians generally prefer purely syntactic accounts for V2 (see e.g. Lightfoot 1993), and even try to give as much a syntactic account for clitic P2 as possible (e.g. Hale 1996, Halpern 1995). For a more prosodically informed attempt to account for V2 see also Andersen (2005). See also section 5.2 of Chapter 4 on Typology and Universals.

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Part III

MORPHOLOGICAL AND GRAMMATICAL CHANGE

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8 From Morphologization to Demorphologization

Henning Andersen

Chapter Overview

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1. Introduction

Historical morphology, as a subdiscipline of historical linguistics, is the study of continuity and change in the structure of words and of morphological systems over time. When one follows morphological systems through time, as they are attested in texts or can be reconstructed, one can observe the rise of inflectional paradigms, changes within and in the relations among paradigms, and changes by which morphological paradigms are reduced and dissolved. Both the diversity of such developments in morphological systems and the generalizations that can be made regarding them offer insights into the character of the human capacity for language (Joseph 1998).¹

A distinction is made between derivational and inflectional morphology. Derivational morphology comprises the system of lexical rules employed in the formation of new words or word stems. Inflectional morphology is a part of sentence grammar that integrates lexical and grammatical signs into wordforms (Stump 1998: 14). However, from the point of view of sentence grammar there is not always a sharp line of demarcation between derivation and inflection. Rules of stem formation may be used for the expression of typically inflectional grammatical content; the expression of aspect in the Slavic languages (3.1.1.1) or of aspect and tense in the history of Greek (Haug 2008) are examples. On the

other hand, there is no sharp line of demarcation between inflectional morphology and the analytic expression of grammatical categories. Not only do inflectional categories commonly originate in analytic constructions; it is not unusual for grammatical categories to be expressed only analytically, as, say, periphrastic tenses are, or for a given category to have inflectional (synthetic) and periphrastic (analytic) expressions in complementary distribution; e.g. the tenses of the Latin perfective aspect have synthetic active forms, but periphrastic forms in the passive and in deponent verbs.

For these reasons systems of inflection and the morphological processes they embody are the primary, but not the exclusive concern of historical morphology.

1.1 Morphological Theory and Historical Morphology

The study of historical morphology at one at the same time presupposes a theory of morphology and provides essential data for the formation of such a theory. For this reason it is necessary initially to adopt an approach that does not prejudice issues of interpretation in a way that might be counterproductive.

Like all other parts of a linguistic system, the morphology of a language is a product of history. Hence any synchronic state can be expected to contain morphological patterns of different age and of different degrees of viability or vitality—obsolete and obsolescent patterns, unproductive established patterns and productive established patterns, emergent patterns, and innovative deviations from normal usage that may be insignificant or may be harbingers of future patterns.

Theories of morphology are typically devised by scholars whose interest is in synchronic description (Spencer 1991, Stump 1998: 35). They tend to assign equal importance to the irregular and the regular and to the unproductive and the productive, and they are mostly oblivious of the fact that synchronic variation is a source of information about the direction of developments that are in progress at a given time and in any case has to be considered part of any synchronic language state.

The historical linguists who study the interplay of preservation and renewal in histories of morphological systems will likely develop a different understanding of morphology. True enough, complex morphological patterns are often transmitted through time with great fidelity, giving evidence of the human ability to acquire quite intricate, seemingly arbitrary patterns of morphological signs. But whenever a change occurs at some historical stage, provided the attestation is sufficiently ample, it invariably shows that morphological change proceeds through stages of ordered variation (Andersen 2003) and demonstrates that morphological systems are subjected to a fine-grained analysis, with

respect to both their grammatical content and the correlated patterns of expression, as they are passed on through time. Many innovations show that analysis does not halt at morpheme boundaries, but proceeds to identify smaller elements—phonological segments and features—that over time are made to correlate with features of (lexical or) grammatical meaning and/or with properties of contiguous grammatical signs.

To capture such details and to benefit from the evidence they provide of the human capacity for language the historical linguist is best served by an approach that pushes morphological analysis to the hilt and consistently aims to reveal that ‘coordination between certain sounds and certain meanings’ to study which is ‘to study language’ (Bloomfield 1935).

1.2 Symbols, Indexes, and Icons

All morphological signs are symbols.² But among morphological signs one can identify simple symbols, indexical symbols, and iconic symbols. In agglutinative morphology (1) all the individual expressions of the word are simple symbols. But the string of expressions directly reflects a string of content units, it diagrams it.³ In Table 8.1, which is a typical example from a flective language, the string of expressions includes both symbols and indexes.⁴ The illustration makes no distinction between these two kinds of signs; it is intended by its author (Matthews 1972: 135) to show how chaotic morphology can seem.

- (1) Russ. *Vi-rva-l-a-s'*
 OUT:PFV-TEAR-PST-FEM-INTR
 ‘it tore loose (escaped)’

Table 8.1 Latin *kukurrīstī* ‘you.SG ran, have run’

Grammatical representation:	CURR-	+	Perfective	+	2nd	+	Singular
Phonological representation:	ku	+	kurr	+	is	+	ti:

But if one considers the morphological rules (2) that encode this wordform (and are needed for many other wordforms), the distinction between symbols

and indexes becomes clear. Each sign rule has the following (minimal) format: $C \rightarrow X / N_{C,X,S}$ (where \rightarrow = 'is realized as,' C = content, X = expression, S = syntax, N = environment). Each rule establishes a symbolic relation between expression and content and one or more indexical relations between the content and other contents and between the expression and features of content, expression, or syntax in the environment (Andersen 1980; Carstairs-McCarthy 1992: 212). The wordform in Table 8.2 reflects rules (2.a.i), (2.b.iii), (2.c), and (2.d.i).

- (2) (a) 'run' - \rightarrow (i) *kukurr-* / $_$ [PFV], (ii) *kurs-* / $_$ [PASS.PCP], else (iii) *kurr-*. E.g. *kurr-ō* (IPFV.PRS) vs. *kukurr-ī* (PFV.PRS) vs. *kurs-us* (PASS.PCP-NOM.SG.M).
- (b) [PFV] \rightarrow (i) $\text{-}\emptyset$ / $_$ [PRS-1SG, 3SG, 1PL], (ii) $\text{-}\bar{e}r-$ / $_$ [PRS-3PL], else (iii) \rightarrow $\text{-}er-$ / $_$ vowel, \rightarrow $\text{-}is-$ / $_$ cons. E.g. *kukurr- \emptyset - $\bar{e}r-ī$* (-PFV-PRS-1SG), *kukurr- $\bar{e}r- \emptyset -unt$* (-PFV-PRS-3PL), *kukurr- $er-a-m$* (-PFV-PST-1SG), *kukurr- $er-ō$* (-PFV-FUT.1SG), *kukurr- $er-i-m$* (-PFV-PRS.SUBJ-1SG); but *kukurr- $is- \emptyset -tī$* (-PFV-PRS-2SG), *kukurr- $is- \emptyset -tis$* (-PFV-PRS-2PL), *kukurr- $is-se-m$* (-PFV-PST-1SG), *kukurr- $is-se$* (PFV-INF).
- (c) [PRS] \rightarrow \emptyset . E.g. *kukurr- $is- \emptyset -tī$* (-PFV-PRS-2SG) vs. *kukurr- $er-ā-s$* (-PFV-PST-2SG) vs. *kukurr- $er-i-s$* (-PFV-FUT-2SG).
- (d) [2SG] \rightarrow (i) $\text{-}tī$ / [PFV, PRS] $_$, else (ii) \rightarrow $\text{-}s$. E.g. *kukurr- $is- \emptyset -tī$* (-PFV-PRS-2SG), but *kurr- $i-s$* (-IPFV-PRS-2SG), *kurr- $\bar{e}-bā-s$* (-IPFV-PST-2SG), *kukurr- $er-ā-s$* (-PFV-PST-2SG), etc.
- (e) [2PL] \rightarrow (i) $\text{-}te$ / [IMPV] $_$, else (ii) \rightarrow $\text{-}tis$. E.g. *kurr- $i-te$* (IMPV-2PL), *kurr- $i-tis$* (PRS-2PL), *kukurr- $er-ā-tis$* (-PFV-PST-2PL).

Table 8.2 Latin *kukurristī* 'you.sg ran, have run'

Content:	'run'	+	Perfective	+	Present	+	2nd	+	Singular
Expression:	<i>kukurr-</i>	+	<i>-is-</i>	+	\emptyset	+	<i>-tī-</i>	+	\emptyset

1.3 Morphological Signs, Symbols and Indexes

Morphological indexes are the word-level counterpart of those indexes that provide explicit textual cohesion on every other level of sentence structure, concord and agreement, anaphora and cataphora, reflexives, switchreference, and

subordinators and, on the interpersonal level, exophoric deixis, politeness markers, etc. The function of these expression indexes is to support the implicit lexical and grammatical index relations there are in the content plane, from the semantic coherence on every syntactic level of the context to the utterance reference and the presuppositions of the speech act context.

The rules in (3) imply the understanding that a morphological sign is a triple of grammatical content (grammemes, or grams), expression (exponent) and syntactic specifications (Lieber 1992, Lehrer 2000, Mel'čuk 2006: 384). The syntactic specifications are (i) content-syntactic and relate the content of a sign to the content of another sign or signs; and (ii) expression-syntactic and relate the expression of a sign to the content, the syntax, and/or the expression of another sign or signs. Example (4) illustrates both $X-C_N$ and $X-X_N$ relations. An example of $X-S_N$ relations are the suffix allomorphs in Lat. *femin-ae* 'woman,' *vir-ī* 'man,' *virgin-is* 'maiden,' *dom-ūs* 'house,' *di-ēs* 'day,' each of which symbolizes GEN.SG and indicates the declension class of its stem.

Note that sign rules such as those sketched in (2) reflect the encoder's (deductive) point of view. Decoding involves abductive inference based on the chain of expression elements, as in Table 8.2, and so does acquisition. It is in these abductive inferences that paradigms of content and the symbolic and indexical relations of the signs they comprise can come to be reanalyzed—matters that are essential to the linguist's interpretation of morphological change.

1.4 Morphological Signs and Morphological Processes

It is customary to inventorize the morphological processes languages employ to integrate expressions of lexical and grammatical meaning into wordforms (Spencer 1991, 1998; Mel'čuk 2006: 288). Since morphological systems may include grammatical categories that are expressed by analytic means (section 1), such an inventory must comprise three categories of expressions, (i) phrases and words, (ii) clitics, and (iii) the affixes and modifications of inflection proper.

Phrases and words are recognized as expressions for grammatical content when they are paradigmatically related to grammatical word(form)s, e.g. verbs (Lat. *cantāta erat* 'had been being sung' : *cantāverat* 'had been singing'), adpositions (*as regards* : *about*), subordinators (*in case* : *if*).

Clitics are grammatical words that lack accent and are prosodically integrated with free words, their hosts.

In inflection, there are signs with fixed expressions, relative expressions, and zero expressions.

Affixes are morphologically bound simple signs with an expression, grammatical content, and syntactic properties. They include suffixes, prefixes, infixes, circumfixes, transfixes, and suprafixes (Mel'čuk 2006: 299). Some affixes lack content; their function is defined entirely by their syntactic properties. Common examples (in italics) are (i) interfixes such as the *-o-* in Russ. *krasn-o-belyj* [red-Ø-white] 'red-and-white,' or the *-s-* in Gm. *Zeitung-s-leser* 'newspaper reader'; (ii) suffixes such as the stem formants in Russ. *aplodir-ova-t'* 'applaud,' Gm. *applaud-ier-en* 'applaud'; and (iii) prefixes such as the Ir. *no-* in *no-m-ben* [Ø-me-strikes] 'he strikes me'; it indicates the object (here *-m-*) of an unprefixed ('minimal') verb or the imperfect indicative, secondary future, or past subjunctive (Fife and King 1998: 492).

Relative expressions have no fixed phonological shape (Mel'čuk 2006: 301) but are otherwise regular signs with grammatical content and syntactic specifications. They include (regular) reduplications, e.g. Gk *ge-grapha* 'have written,' *pe-paideuka* 'have taught' as well as apophonies and permutations. Apophonies may be segmental (vowel or consonant replacement, truncation) or suprasegmental (accent displacement or tone replacement).

With the understanding that grammatical content can be both symbolized and indicated, allomorphy and morphophonemic alternations become a meaningful part of morphology, and, as in Lat. *kukurristī* in Table 8.2, standard analytic problems become more tractable. For example, since English does not have a system of regular vowel alternations, a 'replacive' or apophonic analysis of *geese* as 'goose + *u* ⇒ *i*' is unconvincing. But the fact that *geese* means both 'goose' and 'PL' follows simply from the rule 'goose' → *geese* / + PL, else *goose*; in other words, the expression *geese* symbolizes 'goose' and indicates 'PL.' The other part of this picture is that 'PL' → *-Ø* / {'foot,' 'goose' . . .} + , *-ən* / {'child,' 'ox', . . .} + , else /əz ~ z ~ s/. (Note that in the expression *silly geeses* there is no content 'goose'.)

Zero expressions. Some theoreticians of morphology have found it difficult to accept the relevance of zero elements to the description of morphology. But in inflection, zero expressions can both have symbolic grammatical content and, by virtue of their syntactic specifications, have an index function. (These are the two roles zeros have in numbers: in 2009, each zero symbolizes 'none,' but by virtue of their position, one indicates the number of hundreds, the other the number of tens.) It is significant that where zero allomorphs develop through sound change, circumstances may favor their replacement with overt allomorphs (see 3.4.1.1). There is thus a difference between a zero expression and no expression—consider the inflected Russ. *os'en'-Ø.NOM.SG* 'autumn' vs. the invariable Russ. *očen'* 'very'—which cannot be dispensed with once and for all by fiat, but must be recognized on a language-particular basis (Mel'čuk 2006: 469).

1.5 Morphological Change, Grammaticalization and Analogy

A grammaticalization is a macro-change comprising changes in content, in content syntax (semantax), in expression, and in expression syntax (morphosyntax).

The central change in a grammaticalization is a content change, typically from lexical to grammatical content (*grammation*), or from grammatical to more grammatical content (*regrammation*). It typically goes hand in hand with a semantactic change (*upgrading*), and is commonly followed by morphosyntactic change toward closer bonding (*integration*) and expression simplification (*reduction*) (Heine 2003, Andersen 2006a, 2008).

These change types imply the existence of changes from grammatical to non-grammatical, including zero, content (*degrammation*), of semantactic *downgrading*, toward looser bonding (*emancipation*), and fuller expression (*elaboration*). Changes in both categories are relevant to historical morphology.

Analogy has traditionally been central to explanations of morphological change. It is duly acknowledged in textbooks and handbooks of historical linguistics (e.g. Hock 2003). Indeed its central relevance everywhere in the cognitive realm is beyond doubt (Anttila 2003). The brief survey of morphological change that follows aims to describe types of change and largely leaves issues of explanation aside.

2. Morphologization

Morphologization is often viewed as a kind of, or as a stage in, grammaticalization. But the types of change for which the term *morphologization* is appropriate are best kept apart from the common understanding of grammaticalization, for morphologizations are changes that affect grammatical expressions, i.e., they presuppose grammation or regrammation (see 1.5). A first definition of morphologization would be ‘the kinds of change by which grammatical expressions become clitics or inflectional affixes.’

But just as it is traditional to discuss changes in allomorphy under the heading of historical morphology, so there is no tradition for making a sharp distinction between the morphologization of grammatical expressions and the ways in which morphophonemic alternants and alternations become morphologized, be it as symbols or as indexes of grammatical signs (hereafter grams).

There are, then, two categories of morphologization to be distinguished. Morphologizations_A (from syntax, or ‘from above’) are changes in morphosyntax by which grammatical expressions become affixes (2.1). Morphologizations_B (from phonology, or ‘from below’) are grammations: they are changes by which phonological features, segments, or alternations that are already parts of word-forms are reanalyzed as expressions of grammatical content (2.2).

The difference between these two kinds of change is great enough to justify separate names for them.⁵ But traditionally both types have been called *morphologization*; and since the outcome of both is grammatical expressions that are (parts of) wordforms, it is not unreasonable to have the same term for them. They can be brought under a single definition of *morphologization* as ‘types of change by which grammatical expressions or other expression elements become clitics or inflectional affixes or modifications.’

2.1 Morphologization from Syntax

In morphologization_A, a grammatical sign whose expression is a free form undergoes change in bonding (integration) and, commonly, in the phonological shape of its expression (expression reduction).

The typical integration changes are these: a free grammatical word becomes a clitic (2.1.1), a clitic becomes a bound affix (through *univerbation*) (2.1.2), or a bound affix fuses with its stem (through *metanalysis* or boundary loss) (2.1.3) (Hopper and Traugott 1993, Heine and Kuteva 2002). The extent to which such changes may be favored or disfavored by typological constraints remains an open question (Traugott and Heine 1991: 8, Andersen 2008: 17).

In expression reduction a grammatical word, clitic, or affix loses phonological material (by *erosion*, *attrition* or *phonological reduction*) through the reanalysis of allegro variants, or it becomes adjusted phonologically to its context and/or vice versa. These adjustments, which are of several kinds (see below), may give rise to grammatical indexing (1.3; 2.1.4). Besides expression reduction, grammatical signs are subject to phonological changes proper (Neogrammarian sound changes), which affect phonemes or phoneme sequences independently of word-internal boundaries.

Grammaticalization studies often convey the impression that the development from free form to clitic and then to affix are ineluctable stages of grammaticalization. However, no morphosyntactic changes occur of necessity, and when changes do occur, they often occur at a very slow rate, and they may be arrested at any stage. The same must be said of expression reductions; grammatical expressions can remain unreduced as they change from word to clitic to affix.

The examples, which follow section 2.1.3, are arranged roughly according to the number of morphosyntactic and expression reduction changes each exemplifies.

2.1.1 From Word to Clitic

In the development from word to clitic the establishment of a fixed position for the grammatical expression sets the stage for a reanalysis of its morphosyntax,

by which it becomes appended before or after a neighboring phrasal or lexical host as enclitic or proclitic; for a synchronic typology, see Klavans (1985). Here its expression may lose prosodic prominence and be reduced: its increased predictability within its context favors allegro realizations, which may come to be reanalyzed as basic forms; e.g. SBC future o. *pravi-ti hoć-u* > *pravi-ti=hć-u* > *pravi-ti=ć-u* > reg. *pravi-t=ć-u* > *pravi=ć-u* 'I'll work'; o. *pas-ti=ć-e* > *pas-t=ć-e* > *paš=ć-e* 's/he'll fall' (Milićević 2005).

'Simple clitics' develop in positions established by existing word order rules of the language (Zwicky 1977). Common examples are (i) articles and possessives in noun phrases; Eng. *an=old lady*, dial. *mi=old lady*; (ii) adpositions in adposition phrases; Eng. *in=all*, *to=me*; and (iii) pronouns and auxiliaries (tense, aspect, and mood markers); Eng. *fill 'er up*, *leave 'em*, *we'll*, *we'd*, *we'd have* /fɪl=ər='əp liv=əm wi=l wi=d wi=d=əv/.

Clitics in other positions may reflect an earlier word order (9) or may have changed hosts—as in the case of the verbal clitics of the Romance languages—through a gradual change, observable in synchronic variation as 'clitic floating.'

'Special clitics' are sentence clitics. Some sentence clitics have non-clitic (traditionally: *orthotonic* 'fully accented') alternants that can occur anywhere in the sentence; this is often true of clitic pronouns and auxiliaries. Others may have only clitic expressions; thus, commonly, subordinators, interrogative markers, and modal particles.

In origin 'special clitics' may be phrasal or lexical clitics which have the sentence as scope and in 'free word-order' (nonconfigurational) languages have shifted to a dedicated clitic position in the sentence and become serialized as part of a clitic chain in that position.

The positions that are dedicated to 'special' clitics are most commonly (i) at the beginning (the left edge) or (ii) at the end (the right edge) of the sentence. In left-edge languages, initial sentence clitics occur at the very beginning of the sentence, other sentence clitics, mostly enclitics, occur after the first orthotonic word or the first phrase (DP or PP). These are traditionally called *second-position* or *Wackernagel (en)clitics* in honor of Jacob Wackernagel (1853–1938) who identified this enclitic position for Indo-European (Spencer 1991: 355). Right-edge languages present a mirror image of this clitic distribution, e.g. Nganhcara (Klavans 1985, Cysouw 2005).

The reason for the dedicated positions for clitics in free-word-order languages is that word order in such languages diagrams the information structure of the sentence (Boguslawski 1977). Sentence clitics are not relevant to that structure since they represent grammatical categories that are obligatory or presupposed; Lambrecht (1994); Lehmann (2008b). Their separation from the word order that represents the information structure of the sentence facilitates sentence processing.

Although sentence clitics have no bearing on the information structure of the sentence, there are circumstances under which individual clitics may be appended elsewhere in the sentence to give greater weight to an emphasized constituent. Such 'floating' clitics can become appended to a semantically relevant host and thus with time change from sentence clitics to phrasal or lexical clitics (Spencer 1991: 365, 369).

Changes in which free words > second-position clitics > lexical clitics (> inflectional affixes) (4) invalidate the traditional assumption that today's morphology is simply yesterday's syntax.

2.1.2 From Clitic to Affix. Univerbation

A clitic that has a stable position relative to a host may be reanalyzed as an affix provided its host can serve as a stem. Stem and affix are parts of a single word, hence the term *univerbation*. The change to affix and univerbation may affect both 'in situ' clitics and former Wackernagel clitics that have become lexical clitics (2.1.1).

The actualization of a change from clitic to affix is gradual in several respects.

(i) The clitic's position does not have to be perfectly stable for it to be reanalyzed as an affix. Both before and after the reanalysis, the new affix can occur separately from its stem, presumably always with pragmatic, social, or stylistic value (4). The standard term for this is Gk. *tnesis* 'separation.' In the normal course of events the frequency of *tnesis* declines over time until the affix appears consistently appended to its stem (Andersen 1987). At any time during such a development the affixes appear problematic to a narrowly synchronic theory of clitics (Spencer 1991: 375).

The union of stem and affix may involve adjustments of several kinds.

(ii) Allomorphic univerbation. The change from clitic to affix may entail the replacement of a free-form host allomorph with a bound-stem allomorph (4).

(iii) Prosodic univerbation. The change from clitic to affix may entail an adjustment of the prosodic features of the host in the new, univerbated forms (contrast (5) and (7)).

(iv) Segmental univerbation. Through the univerbation segments at the stem-affix boundary may become subject to word-internal sequential constraints; examples in section 2.1.1.

2.1.3 Expression Reduction

The development free word > clitic > affix typically includes expression reductions: the grammatical word or clitic loses prosodic and/or segmental features

through elision, syncope (apocope, aphaeresis) or haplogy (3), (6), (7), (8), (9). The bound affix becomes adjusted phonologically to its context and/or vice versa (7), (6). Besides, there are regular phonological changes, which will not be discussed here.

2.1.4 Examples

- (3) *Inflected word > inflected clitic*. In North Russian dialects the distal demonstrative *t-ót*.NOM.SG.M, *t-á*.NOM.SG.F, *t-ó*.NOM.SG.N ‘that, those’ is regrammatized as a definite article, unaccented and enclitic to the noun—at first, presumably, with full agreement in case, number, gender, in modern times limited to the direct cases. E.g. *dóm-Ø=ot-Ø*.NOM.SG.M ‘the house,’ *žon-á=t-a*.NOM.SG.F, *žon-ú=t-u*.ACC.SG.F ‘the wife,’ *pól'-o=t-o*.NOM.SG.N ‘the field,’ *žón-y=ti*.NOM.PL ‘the wives,’ *pol'-á=ti*.NOM.PL ‘the fields’; (Avanesov and Orlova 1965: 265). See the subsequent development in (25).
- (4) *Inflected clitics > suffixes*. *Allomorphic univerbation*. *Tmesis*. In medieval Polish (1400s), the past tense of verbs is composed of a finite form (an earlier participle) inflected for gender and number, serialized by information structure, and an enclitic person–number marker in second position. But person–number markers can occur outside second position appended to past-tense verb forms, at first clearly for purposes of contrast or emphasis, then with increasing frequency. At a certain point, finite past-tense forms are reanalyzed as stems and the person–number clitics as suffixes: univerbation.

Polish has, and had, hundreds of verbs in which this univerbation did not have phonological consequences, but in a couple of dozen frequent verbs (and their numerous prefixed derivatives), the free form of the masculine singular, which occurred with overt 1SG, 2SG markers and a zero 3SG, e.g. /*ńus*/ ‘carry.PST.SG.MASC,’ was replaced with the bound stem allomorph /*ńos-ł-*/ ‘carry-PST’ that occurred in other genders and numbers, e.g. /*ńos-ł-a-m*/ ‘carry-PST-FEM-1SG,’ /*ńos-ł-i-śmi*/ ‘carry-PST-PL-1PL.’ Thus /*ńus=e-m*/ > /*ńos-ł-e-m*/ ‘carry-PST-MASC-1SG,’ /*ńus=e-ś*/ > /*ńos-ł-e-ś*/ ‘carry-PST-MASC-2SG,’ but /*ńus*/ ‘carry.PST.MASC.3SG.’

In effect, univerbation was achieved by the replacement of a free form with a bound allomorph stem, which was generalized for all forms but 3SG.MASC. The univerbated forms of these verbs are attested from the 1500s on, but the person–number suffixes occurred in tmesis in spoken Polish through the 1900s and continue to be familiar to speakers from literary usage (Andersen 1987).

(5) *Person–number clitics > suffixes. Partial prosodic univertation.* The univertation in 2.1.4.2 occurs about the time that Polish ictus (automatic ‘stress,’ marked with underlining in (5)) is changing from the word-initial to the penultimate syllable; this change is well attested in sixteenth century Polish verse (Topolińska 1961). In some dialects (type A) the univertation of the person–number markers had already taken place when the ictus shifted; these dialects have consistent penultimate ictus in all past tense forms; see Table 8.3. In other dialects (type B), including those on which the standard language is based, the univertation was in progress when the ictus shifted; the change from clitic to affix had been completed in the singular, but not in the plural; hence 1SG and 2SG forms have penultimate ictus, but the standard 1PL and 2PL forms have antepenultimate ictus, i.e., penultimate ictus counting from the enclitic boundary; see Table 8.3. In yet other dialects (type C) the univertation had not taken place when the penultimate ictus was established; here all past tense forms have the ictus on the penultimate syllable counting from the old clitic boundary; see Table 8.3 (Andersen 1987, 1990). Nowadays, probably, none of these endings are clitics; they and the 1PL and 2PL forms in the standard language (type B) are synchronic exceptions to the ictus placement rule; all varieties of Polish have some such lexical and morphological exceptions. In current Polish there is a tendency to generalize the consistent penultimate ictus of type A dialects.

Table 8.3 Ictus change and univertation in Polish past-tense forms, *robić* ‘make, do’

	<i>Old Polish</i>	<i>Type A dialects</i>	<i>Type B dialects</i>	<i>Type C dialects</i>
1sg	<u>rob</u> ’i-t=em	rob’ <u>i</u> -t-em	rob’ <u>i</u> -t-e-m	rob’i-t-em
2sg	<u>rob</u> ’i-t=eś	rob’ <u>i</u> -t-eś	rob’ <u>i</u> -t-e-ś	rob’i-t-eś
3sg	<u>rob</u> ’i-t	rob’ <u>i</u> -t-Ø	rob’i-t-Ø	rob’i-t-Ø
1pl	<u>rob</u> ’i-t-i=śmy	rob’i-t-i-śmy	rob’ <u>i</u> -t-i-śmy	rob’i-t-i-śmy
2pl	<u>rob</u> ’i-t-i=ście	rob’i-t-i-ście	rob’ <u>i</u> -t-i-ście	rob’i-t-i-ście
3pl	<u>rob</u> ’i-t-i	rob’ <u>i</u> -t-i	rob’ <u>i</u> -t-i	rob’i-t-i

(6) *Expression reduction without and with cliticization.* Some 1500 years ago, in many Slavic dialects, the inchoative of the copula or existential CS **bǫdǫ* ‘become, come to be’ was grammatized as auxiliary for the prospective aspect (Andersen 2006c, 2009).

In most Slavic languages that have this auxiliary, it has remained a free word without any expression reduction; e.g. Russ. *búdu*.1SG, *búdeš*.2SG, *búdem*.1PL; Pol. *będę*.1SG, *będziesz*.2SG, *będziemy*.1PL; Cz. *budu*.1SG, *budeš*.2SG, *budeme*.1PL.

In Slovenian, the forms of the future auxiliary have remained free forms and have retained their accent, but they have developed variants reduced by one syllable: Sn. *bóm* ~ *bódem*.1SG, *bóš* ~ *bódeš*.2SG, *bómo* ~ *bódemo*.1PL.

In East Sorbian (extinct by the mid-1900s), the forms of this auxiliary became enclitics, lost their ictus, and underwent phonological reduction, losing the first syllable; ictus marked with underlining, e.g. *ǰa=ʒ'em*.1SG *ʒ'ilać*.INF 'I'll work,' *ty=ʒ'es*.2SG *ćanuć*.INF 'you'll pull,' *me=ʒ'eme*.1PL *pucovać*.INF 'we'll shave' (Ščerba 1905).

- (7) *Inflected wordforms > phrasal clitics > suffixes. Expression reduction. No prosodic univerbation.* In Old Icelandic the distal demonstrative pronoun *hinn*.M, *hina*.F, *hitt*.N is regrammatized as definite article, enclitic to the noun in the 1200s; e.g. NOM.SG *hest-ur*.M 'horse,' *land*.N 'land, country,' definite: *hest-ur=inn*, *land=itt* GEN.SG *hest-s*, *land-s*, definite: *hest-s=in-s*, *land-s=in-s*. The article loses stress and its initial /h/ (expression reduction). Univerbation is followed by vowel syncope in some case forms, e.g. *hest-i-in-um*.DAT.SG > *hestinum*, *hest-um-in-um*.DAT.PL > *hestunum* (Haugen 1993, Stolz 2007)

The same development occurs in the Scandinavian languages, followed by additional expression reductions and phonetic change. The 'trapped' noun endings (cf. Harris and Faarlund 2006) are lost; e.g. Da. o. GEN.SG *land-s=en-s* > *land-et=s*; and the postposed articles become bound, unaccented suffixes (before 1000s; Skautrup 1944: 269), but there is no prosodic univerbation. These languages have word accents (Accent 1 vs. Accent 2) that reflect the Old Norse syllable count (monosyllabic vs. polysyllabic). But definite nouns (underlined) retain Accent 1 after the univerbation; e.g. Sw. *land*¹ – *land-et*¹ 'land, the land,' *länd-er*² – *länd-er-n-a*² 'lands, the lands' (with the conventional marking of the accents). Similarly in Danish, where Accents 1 vs. 2 are reflected as presence vs. absence of *stød*: Da. *land* – *land-et* [læn¹ – 'lænn²əð] 'land, the land,' *land-e* – *land-e-n-e* [lænnə – 'lænnə] 'lands, the lands.' Evidently Accents 1 and 2 were established before the definite articles lost their clitic status.

- (8) *Word > phrasal clitic > suffix. Univerbation. Stem and suffix reduction, fusion.* In Common Slavic, the anaphoric pronoun *j-ī* is regrammatized as a definite article and becomes enclitic to adjectives and, occasionally,

attributive phrases, e.g. OCS *slěp-ŭ.NOM.SG.M* 'a blind (man),' *slěp-ŭ=j-ŭ.NOM.SG.M* 'the blind (man)'; *bes=posag-a.GEN.SG* 'without wedding: unwed,' *nevěsto.VOC besposag-a=j-a (bes=posag-a.GEN.SG=j-a.NOM.SG.F)* 'oh unwed maiden!'

In phrases with conjoined adjectives or participles, in older texts, the article often occurs only with the first constituent; e.g. *zŭl-y=j-e že i dobr-y* 'the bad PTC and [the] good; ACC.PL'; other copies of the text have *zŭl-y-j-e že i dobr-y-j-e* 'the bad PTC and the good' (Vaillant 1964: 171), perhaps evidence of univerbation. Clear evidence comes as (i) some adjective endings become reduced when they are followed by the definite article (they become meaningless interfixes), or the article stem *-j-* is elided, and (ii) some adjective endings fuse with the article (ending) into a single ending; e.g. CS **nov-omi=j-imŭ.INS.SG* > OCS (i) *nov-y-j-imŭ* (where *-y-* is an interfix) > (ii) *nov-yimŭ.INS.SG*; CS **nov-u=j-emu.DAT.SG*: OCS *nov-u-j-emu* > (i) *nov-u-umu* > (ii) *nov-umu.DAT.SG*.

- (9) *Gradual univerbation. Clitic reduction.* In early western Romance the Late Latin *habeo* 'have' is regrammatized as a modal 'have (to).' Like other modals, this has a future-time reference implicature for its infinitive clause. (i) It is regrammatized as an expression of future-time reference and paradigmatised as a future-tense (or perhaps prospective aspect) auxiliary.⁶ (ii) Its paradigm is reduced to two tenses, present (the modern French future) and imperfect (the modern French conditional). (iii) It becomes fixed in the position after the infinitive, first as a clitic (see below) and then univerbated, as indicated by the single word stress, originally penultimate. (iv) The forms of its Late Common Romance paradigm (*-ajo.1SG, -ajs.2SG, -ajt.3SG, -ajmu(s).1PL, -ajtis.2PL, -ajnt/-awnt.3PL*) become reduced and later subject to phonological changes that will not be detailed here.

The earliest attestation in French (*daras* < *dare habes*; Fredegar's Chronicle, AD 600s) documents stage (iv) in this development. Extrapolating from other Romance text traditions, it appears that at the earlier, clitic stage, the auxiliary occurred just once with conjoined infinitives; e.g. OPort. *dir=ei e non estar* 'I shall speak and not stand' (Huber 1933: 205). Also, at this stage the future auxiliary was part of a clitic chain that followed the lexical verb. This is seen in OCat. *trobars'icha* (i.e. *trobar=s'=ich=a*, Cat. *s'=hi=trobar-ā*) 'it will be found there' and OOc. *donarlot'ai* (i.e. *donar=lo=t'=ai*, Prov. *te=lo=donar-ai*) 'I will give it to you.' Clitic chains are still current in Portuguese, where the auxiliary may be separated from the infinitive by a pronominal clitic; e.g. *lavar=me=ei* 'I will

wash,' *dar=lhe=as* 'you will give [it] to him/her.'⁷ In the other western Romance languages pronominal clitics have moved in front of the future forms (as in the preceding examples; cf. Fr. *il=s'=y=trouvera*, *je=te=le=donnerai*, *tu=le=lui=donneras*), and univertation of infinitive and future auxiliary has become complete (Valesio 1968, 1969, Fleischman 1982: 73, Schwegler 1990: 129, Enrique-Arias 2005, Klausenburger 2002, 2008).

2.2 Morphologization from Below

2.2.1 Symbolic Grammatical Signs

In Morphologizations_b from below phonological feature(s) or segment(s) of an existing wordform are reanalyzed as the expression dedicated to a certain grammatical content (Greenberg 1991, Gaeta 2004, Andersen 1980, 2008).

- (10) *Metanalysis of a feature bundle*. In Middle Russian the numeral 'two' has two NOM-ACC forms, *dv-a.M-N* and *dv'-ě.F*. For historical reasons, the phoneme /ě/ (which eventually merges with /e/) is always preceded by a palatalized consonant. Hence for the linguist, the stem allomorph *dv'*- of the feminine wordform is phonologically conditioned. But in large areas of southern Russia and Belarus, the palatalization has been reanalyzed as the expression of feminine gender. This is clear from the fact that the *dv'*- allomorph has been generalized to the other cases of the paradigm. A consistent analysis will pinpoint the palatalization feature alone as the expression of feminine gender as in Table 8.4 (Andersen 2008: 20).

Table 8.4 Metanalysis of Russ. dial. *dv'e* > *dv'-e*

	MidRuss.	St. Russ.	SW Russ. dial., Belarus
NOM-ACC	<i>dv-a.m-n dv'-ě.f</i>	<i>dv-á.m-n dv'-é f</i>	<i>dv-á m-n dv'--é f</i>
GEN-LOC	<i>dv-ux</i>	<i>dv-úx</i>	<i>dv-úx m-n dv'--úx f</i>
DAT	<i>dv'-ěma</i>	<i>dv-úm</i>	<i>dv-úm m-n dv'--úm f</i>
ins	<i>dv'-ěma</i>	<i>dv-um'á</i>	<i>dv-umá m-n dv'--umá f</i>

- (11) *Metanalysis*. Middle Russian collective nouns are formed with a suffix *-j-*; they are neuter and singulare tantum. As a consequence of vowel change, the NOM.SG ending of stem-stressed collectives becomes indistinguishable from the NOM.PL: *kam'én'-j-o* 'stones,' *kolós'-j-o* 'ears

(of grain), *zúb'-j-o* 'teeth,' *súč'-j-o* 'branches' are reanalyzed as plurals *kam'én'-j-a*, *kolós'-j-a*, *zúb'-j-a*, *súč'-j-a*. In standard Russian, a few of these plurals retain their collective meaning, e.g. *zúb'-j-a* 'cogs' vs. *zúb-i* 'teeth,' *l'ist'-j-a* 'foliage' vs. *l'ist-i* 'leaves, sheets,' but in most former collective nouns the *-j-* is a meaningless interfix, selected by some stems as a plural-stem formative. However, in some Russian dialects the *-j-* has been reanalyzed as a plural marker and extended to a number of common, individuated plurals, e.g. *stakan-Ø.sg* – *stakán'-j-a*. PL 'glass, tumbler,' *b'er'óz-a.sg* – *b'er'óz'-j-a*. PL 'birch,' *lóšad'.sg* – *lošad'-j-á*. PL 'horse' (cf. st. Russ. *stakán-i*, *b'er'óz-i*, *lóšad'-i*) (Avanesov and Orlova 1965: 117).

2.2.2 Grammatical Indexes

The best known example of morphologization from below in the literature, probably, is the development of vowel replacement (*Umlaut*) as a plural marker in German. Cf. such pairs as Gm. *Vater.sg* – *Väter.pl* 'father,' *Boden.sg* – *Böden.pl* 'floor,' *Bruder.sg* – *Brüder.pl* 'brother.' However, these vowel replacements also accompany overt plural suffixes; e.g. *Wurm.sg* – *Würm-er.pl* 'worm,' *Floss.sg* – *Flöss-e.pl* 'raft,' *Gans.sg* – *Gäns-e.pl* 'goose.' They also accompany several derivational suffixes (e.g. *väter-lich* 'paternal,' *Brüder-lein* 'little brother'), for some stems also the interfix that marks compounds (e.g. *Gäns-e-feder* 'goose-quill'). It is a question, then, whether the vowel replacement has been grammatized to symbolize 'plural' in unsuffixed plurals, e.g. *Vater.sg* – *Väter.pl*, or it has been grammatized as an index of 'plural' before the zero plural marker (e.g. *Väter-Ø.pl*), just as it serves to index other affixes. The first possibility assumes a symbolization rule "*PL*" → *a* ⇒ *ä* etc.' that applies to *Vater* and all other nouns with no other plural sign (and umlaut as an index of affixation everywhere else). The second assumes that umlaut is everywhere an index of affixation, e.g. *Vater* → *Väter* / *_* + {*PL*, *-lich*, *-chen*, . . .}.

A similar dilemma is raised by the modifications in Western Jutish (Danish) (12).

- (12) *Morphologized modification*. In Western Jutish, subsequent to the vowel apocope (AD 1000s), monosyllabic nouns that had previously formed the plural by adding ODa. *-æ* exhibited stem alternations as follows: stems with a long vowel nucleus had an alternation (i) presence vs. absence of *stød*, stems with a short vowel had alternations of (ii) plain vs. preglottalized final plosive, or (iii) normal vs. lengthened rhyme sonorant, or (iv) short vs. long vowel (Table 8.5) (Ringgård 1960: 336).

The right-hand alternants in these alternations represent 'plural' in nouns and 'plural' and 'definite' in adjectives, and they differentiate 'infinitive' from 'imperative' and 'preterite' from 'past participle'

Table 8.5 Morphologized prosodic apophonies in Jutish

	Sg.	Pl.	
(i)	<i>hu:ʔs</i>	<i>hu:s</i>	'house'
	<i>go:ʔə</i>	<i>go:ə</i>	'farm'
(ii)	<i>bæŋk</i>	<i>bæŋ'k</i>	'bench'
	<i>stɔrk</i>	<i>stɔr'k</i>	'stork'
	<i>hat</i>	<i>ha't</i>	'hat'
(iii)	<i>fəl</i>	<i>fəl:</i>	'foal'
	<i>heŋsd</i>	<i>heŋ:sd</i>	'stallion'
(iv)	<i>fäð</i>	<i>fä:ð</i>	'platter'
	<i>præsd</i>	<i>præ:sd</i>	'minister'

in the verb. But they also accompany various suffixes, inflectional and derivational (cf. 2.2.2).

3. Changes in Inflectional Morphology

Morphological change comprises changes in content, content syntax, expression, and morphosyntax. Since content is organized in paradigms, changes in content consist in the innovation (paradigmatization) of new grammatical categories (3.1); or in the loss of inherited grammatical categories, uncompensated or compensated with renewal (3.2).; or they introduce new combinations of grams or simplify inherited combinations (3.3). Expression changes may accompany changes in content (3.1–3.3), or they may be adjustments of existing expressions for existing grammatical content, changes in the shape of expressions (including syncretism) or in their morphosyntax (3.4).

Besides morphological changes, in the narrow sense of the word, there are morphophonemic reanalyses that change the index content of inherited allomorphy or morphophonemic alternations (3.5).

The impulse for morphological change is in some instances language contact: where there is some degree of bilingualism in a community the traditional language L_1 may be exposed to intrusions by two avenues: the L_2 patterns of primary L_2 speakers may interfere with their L_1 usage (*interference*), and primary L_1 speakers with some L_2 competence may transfer L_2 patterns to their L_1 usage (*transference*). Of the changes mentioned below, (18) is almost certainly motivated by Bulgarian–Turkish bilingualism (see also (27)); for the others, at best weak surmises can be made.

3.1 Elaboration of Morphological Paradigms

Inflectional paradigms can be elaborated through the integration of new grams or through new combinations of grams (see 3.3).

The examples below illustrate the development of new grams of both verbal and nominal categories. In (13), the aspect category is elaborated through the grammation of four additional aspect categories. In (14), a three-gender system is expanded with an animacy distinction.

The two examples exemplify several ways of forming new expressions, derivational means (stem affixes and vowel replacement), syntactic means (auxiliaries), syncretism, and specialization of allomorphs as expressions for different grams.

- (13) *Elaboration. New grams.* Prehistoric Slavic has a tense distinction past vs. present and (i) in the past tense, an aspect distinction imperfect vs. aorist. In the prehistorical period four more aspect distinctions are grammatized, (ii) perfective/imperfective, (iii) determinative/indeterminative, relevant to imperfective verbs of locomotion, (iv) retrospective/absolute, and (v) prospective/actual; Andersen (2009) examines the geography and relative chronology of these developments.

The perfective/imperfective aspect develops through the regrammation of derivational procedural (Aktionsart) categories, telicity (expressed by prefixes) and iterativity (expressed by stem suffixes). In the determinative/indeterminative aspect, the indeterminatives originate in the regrammation of stem-formation patterns marking iterativity in verbs of locomotion. The retrospective aspect is expressed by auxiliary BE + resultative participle. The prospective is expressed by auxiliaries BEGIN, WILL, HAVE (TO), or BECOME + infinitive or participle as regional variants. The retrospective and the prospective arise through reanalysis of infinitival and participial constructions that probably originated as 'exploratory innovations' (Harris and Campbell 1995: 72). Early Slavic texts give evidence of other such constructions that had a certain currency, but were not grammatized (Vaillant 1964: 341).

- (14) *Elaboration. New gram.* Late Common Slavic expands its inherited three-gender system with morphologically expressed animacy.

Animacy is at first expressed only in the accusative singular, the animate with the genitive suffix (syncretism), the inanimate with the inherited accusative suffix. Most dialects early codify the expression of

animacy in masculine singular nouns (for animacy in *a*-declension nouns, see Igartua 2009).

Later, in different Slavic languages, animacy in the accusative is extended to other singular and plural nouns, and to other cases. In Czech, different allomorphs are harnessed as expressions for animacy; e.g. *syn-ovi*.DAT.SG 'son' vs. *tyn-u*.DAT.SG 'fence.' Ukrainian seems to favor syncretism, genitive suffix for accusative case and locative suffix for dative case; e.g. (*na*) *tovaryš-ovi*.LOC.SG (*tovaryš-ovi*.DAT.SG) 'comrade' vs. (*na*) *stol-i*.LOC.SG (*stol-ovi*.DAT.SG) 'table.'

3.2 Simplification

Simplifications are strictly speaking demorphologizations (see section 4). But in the larger historical perspective, the complexity of a morphological system may wax and wane as different parts of it are elaborated or simplified, and in this perspective, elaboration and simplification are equally essential parts of the history of morphological systems. Such long-term developments amount to a corrective to the notion of 'maturity' proposed by Dahl (2005).

Consider the elaboration of the category of aspect in the late prehistory of Slavic (13). It can be viewed as an individual train of (re)grammations (as it was above), but when it is considered in its larger (pre)historical context, it is a return to a degree of complexity that existed in Late Indo-European times (Ivanov and Gamkrelidze 1984, Hewson et al. 2002), and which had been reduced in Early Common Slavic through a series of simplifications. If we turn to the historical development of this system, we see that the elaboration described in (13) has been followed by yet another reduction of the Common Slavic system in Russian and some other Slavic languages (Andersen 2006a). The following examples illustrate the simplification of grammatical categories through degrammation and regrammation.

- (15) *Degrammation. Grammatication.* Old Russian inherits from Common Slavic a vocative, formed from singular nouns of several inflectional classes; e.g. *bogŭ*.NOM.SG – *bože*.VOC 'god,' *synŭ*.NOM.SG – *synu*.VOC 'son,' *žena*.NOM.SG – *ženo*.VOC 'woman,' *gospodŭ*.NOM.SG – *gospodi*.VOC 'lord.' In the plural, vocative function is expressed by the NOM.PL. In the 1200s the Russian vocative falls into disuse and is degrammatized, its function taken over by the NOM.SG (Borkovskij et al. 1965: 226).

In the 1900s a new vocative appears in colloquial Russian, so far established only in hypochoristics of given names and some basic kinship terms, e.g. *Van'* 'Ivan,' *Saš'* 'Alexander, Alexandra,' *mam*

'mummy,' *pap* 'daddy.' It originates through a grammation of an optionally truncated NOM.SG suffix *-a* (Mel'čuk 2006: 503).

- (16) *Regrammation and renewal*. In the earliest Slavic texts there are no traces of the Indo-European imperative. There is instead an imperative whose endings are those of the Indo-European optative, and which has first and third person forms with optative meaning, e.g. OCS *otŭpad-ěmi* 'may I fall away' (Vaillant 1964: 231). It appears that in prehistory the optative took the place of the imperative, perhaps as a more polite, indirect directive; in time it underwent inflation and was devalued (Dahl 2005: 125) being regrammatized as the normal imperative. Concurrently (i) the inherited imperative forms lost their value (degrammation) and went out of use, and (ii) a new optative was established; it is composed of a proclitic 'particle' *da.OP1=* + present tense; in origin it may have been a periphrasis with some form of *da-ti* 'give.'

Within the attestation of Old Church Slavonic the 1SG form, which has no imperative function, goes out of use (degrammation), whereas the 1PL remains as a hortative (regrammation) (17).

It is traditional to speak of 'loss and renewal.' In both the developments sketched here the renewed expressions were probably established as variants of the inherited forms before the latter were lost. Contrast this with the story of the vocative in (15).

3.3 Combinations of Grams

Elaborations may consist in new combinations of grams, and simplifications in the loss of an inherited combination of grams.

In the first case, the new expression may be a concatenation of the respective inherited affixes or an innovated stem-affix formation.

Where a gram is lost, it may leave no traces or some of its expressions may survive as allomorphs representing another gram.

- (17) *Elaboration*. New combination of grams. Russian inherits from Common Slavic an imperative paradigm that includes a hortative 1PL; e.g. *po-govor'-im* 'let's talk' (16). The imperative proper has two forms, e.g. *po-govor'-i.2SG* and *po-govor'-i-t'e.2PL* 'talk!'; 2PL signals 'addressee plus one or more others' or politeness.

The singular vs. plural distinction has been extended to the hortative, e.g. *po-govor'-im.HORT* 'singular hortative' vs. *po-govor'-im-t'e.HORT-2PL* 'plural or polite hortative.'

- (18) *Elaboration. Extension.* Middle Bulgarian makes a distinction between a ‘narrative’ (or conclusive) past-tense form and other past-tense forms that present a past situation without this semantic feature (‘vouched for’). At first developed as a counterpart to the aorist (Table 8.6 (a)), the narrative was extended to other tenses. A new compound preterite was created to carry the content narrative + retrospective, corresponding to the unmarked perfect and pluperfect, and another, based on an innovated *l*-participle formed from the imperfect stem, was created to correspond to the unmarked present and imperfect (Table 8.6 (b)). The innovated forms have been interpreted as morphological calques from Turkish (Mirčev 1963: 208, Levin-Steinmann 2004).

Table 8.6 Inherited and innovated narrative tenses in Bulgarian

	(a) Middle Bulgarian		(b) Modern Bulgarian	
	‘vouched for’	‘narrative’	‘vouched for’	‘narrative’
Present	<i>piš-e</i>		<i>piš-e</i>	
Imperfect	<i>piš-e-še</i>		<i>piš-e-še</i>	<i>piš-e-l</i>
Aorist	<i>pis-a</i>	<i>pis-a-l</i>	<i>pis-a</i>	<i>pis-a-l</i>
Perfect	<i>pis-a-l e</i>		<i>pis-a-l e</i>	
Pluperfect	<i>be-še pis-a-l</i>		<i>be-še pis-a-l</i>	<i>bi-l pis-a-l</i>

- (19) *Degrammation, regrammation.* The medieval Slavic languages distinguish three numbers: plural vs. singular and, within the former, dual vs. plural. The dual is used for two individual referents (e.g. hands, brothers), the plural for an unspecified number greater than one.

In most Slavic languages, the dual falls into disuse (degrammation) during the Middle Ages being replaced in usage by plural expressions (e.g. Borkovskij et al. 1965: 217). For some twentieth century dialects, a small number of lexemes are cited with dual expression and referent; e.g. Ukr. *dv-i korov-i.F* ‘two cows,’ *dv-i vedr-i.N* ‘two buckets’ (Žylko 1966: 84). But cooccurrence with *dvi* ‘two’ suggests the noun endings may be NOM.PL allomorphs conditioned by the numeral (i.e. syntactic indexes rather than symbolic signs) (regrammation).

In the history of Russian, the last lexemes to occur with dual endings and reference were regrammatized as allomorphs of the plural with lexical index value; hence the original NOM.DU endings in such ModRuss. NOM.PL forms as *b`er`eg-á* ‘(river) banks,’ *bok-á* ‘sides,’ *rog-á* ‘horns,’ *úš-i* ‘ears,’ *kolén`-i* ‘knees.’

3.4 Expression Change

Expression changes, other than the kinds that are exemplified in (13, 14), mainly serve the differentiation or syncretism of expressions within paradigms or among paradigms.

- (20) *Expression differentiation.* As a consequence of phonological change, three cases in the Common Slavic *o*-declension become homonymous: the allomorphs *-ŭ/-ĩ* (which indicate different stem-final consonants) represent NOM.SG, ACC.SG and GEN.PL. The corresponding desinences in the *u*-declension are NOM-ACC.SG *-ŭ/-ĩ*, and GEN.PL *-ovŭ/-evŭ*. Despite the very low lexical frequency of *u*-declension nouns, the longer *u*-declension GEN.PL *-ovŭ/-evŭ* early becomes established as a productive allomorph for nouns of both original declensions.

In a subsequent sound change, word-final */-ŭ/* and */-ĩ/* are lost. Now a NOM.SG (and ACC.SG) $-\emptyset$ contrasts with the two GEN.PL allomorphs $-\emptyset$ and *-ov/-ev*. Greenberg (1969) documents consistent developments in several Slavic languages extending the use of the overt GEN.PL allomorph in paradigms where the NOM.SG is $-\emptyset$. He infers that the relation between the $-\emptyset$ and the overt expression diagrams the relation in content between the unmarked NOM.SG and the marked GEN.PL. The earlier spread of the GEN.PL *-ovŭ/-evŭ* allomorphs suggests an identical diagrammatic relation between shorter vs. longer expression and unmarked vs. marked content.

Such developments show there is a difference between homonymy and syncretism: syncretism is a kind of homonymy in which identity of expression reflects shared content. The homonymy of GEN.PL with NOM-ACC.SG was not a syncretism, and it has tended to be resolved.

- (21) *Syncretism.* There is a tendency for phonological differences among expressions to be reduced to a practical minimum. Such grammatically conditioned expression reduction often affects marked categories earlier and more than unmarked categories, e.g. plural more than singular, feminine more than masculine, oblique more than direct cases.

In the history of Russian, palatalized labials at the end of grammatical expressions lose their palatalization; and some dissyllabic singular endings lose their final unstressed high vowel (phonological reduction). The outcome is homonymy in adjective paradigms between INS.SG.M-N *tak-ím* (in Table 8.7) and DAT.PL *tak-ím* (not shown here) and eventually a four-way syncretism in the oblique

GEN-LOC-DAT-INS.SG.F *tak-ój*; *-óju*.INS.SG.F remains as an obsolete, stylistic variant. Innovated forms are bolded in Table 8.7.

Table 8.7 Two types of expression reduction in Russian adjectives; *takój* ‘such’

SG	MidRuss.				1700s		1900	
	MASC	FEM	MASC	FEM	MASC	FEM	MASC	FEM
NOM	<i>tak-ój</i>	<i>tak-ája</i>	<i>tak-ój</i>	<i>tak-ája</i>	<i>tak-ój</i>	<i>tak-ája</i>	<i>tak-ój</i>	<i>tak-ája</i>
ACC	=N/G	<i>tak-úju</i>	=N/G	<i>tak-úju</i>	=N/G	<i>tak-úju</i>	=N/G	<i>tak-úju</i>
GEN	<i>tak-óvo</i>	<i>tak-ójě</i>	<i>tak-óvo</i>	<i>tak-ójj</i>	<i>tak-óvo</i>	<i>tak-ój</i>	<i>tak-óvo</i>	<i>tak-ój</i>
LOC	<i>tak-óm’</i>	<i>tak-ójj</i>	<i>tak-óm</i>	<i>tak-ójj</i>	<i>tak-óm</i>	<i>tak-ój</i>	<i>tak-óm</i>	<i>tak-ój</i>
DAT	<i>tak-ómu</i>	<i>tak-ójj</i>	<i>tak-ómu</i>	<i>tak-ójj</i>	<i>tak-ómu</i>	<i>tak-ój</i>	<i>tak-ómu</i>	<i>tak-ój</i>
INS	<i>tak-ím’</i>	<i>tak-óju</i>	<i>tak-ím</i>	<i>tak-óju</i>	<i>tak-ím</i>	<i>tak-óju</i>	<i>tak-ím</i>	<i>tak-ój</i>

(22) *Trapped expressions.* The ‘trapped’ expressions that can result from univerbation with inflected clitics as in (7) have an occasional counterpart in the univerbation of phrases. Old Russian cardinals ‘11’–‘19’ are phrases of the structure ‘one on ten,’ in which the unit cardinal’s ending expresses case, and ‘ten’ is LOC.SG governed by the preposition *na* ‘on’ (i) in Table 8.8. As these phrasal cardinals become lexicalized and univerbated, (ii) the final LOC.SG ending is degrammatized and apocopated, and *-na-* ‘on’ is degrammatized and becomes an interfix; (iii) NP case comes to be assigned at the end of the cardinal; and (iv) the initial unit cardinal loses its case marking.

Step (iii) in Table 8.8 shows univerbation: the numeral has been reanalyzed as a stem despite the trapped case ending on the unit constituent.

Table 8.8 The chronological development of inflection in ‘11’–‘19’

(i) Old Russian	(ii) Before 1300: Syncope and apocope
$dv^2-e.NOM.N-F-na-d'es^2at^2-e.LOC.SG$	> $dv^2-e.NOM.N-F-na-ds^2at^2$
$dv^2-u.GEN-na-d'es^2at^2-e.LOC.SG$	> $dv^2-u.GEN-na-ds^2at^2$
(iii) ‘Double inflection’	(iv) 1600s: nom stem generalized
> $dv^2-e-na-ds^2at^2-\emptyset.NOM$	> $dv^2-e-na-ds^2at^2-\emptyset.NOM$
> $dv^2-u.GEN-na-ds^2at^2-i.GEN$	> $dv^2-e-na-ds^2at^2-i.GEN$

3.5 Grammatical Indexes

Grammatical indexes are allomorphs or members of morphophonemic alternations that are assigned to specific environments defined with reference to grammatical content, expression or morphosyntactic features.

A great variety of change types can be defined for grammatical indexes. A class of allomorphs or alternants can be expanded or reduced; the index value of a class of alternants can change (among phonological, grammatical and syntactic, and within any of these); the index value of an individual member or members of a class of alternants can change; the expression alternants can change (Andersen 1980).

Here just a few examples will be offered. In (23) reanalysis changes expression indexes to content indexes. In (24) metanalysis changes content indexes to morphosyntactic indexes. In (25), a complex of lexical indexes is gradually transformed to lexical class indexes.

- (23) *Paradigm differentiation. Grammatical indexes. Extension.* In the history of Italian, an early phonologically conditioned vowel alternation in certain verb stems correlated with the position of stress and had grammatical index value as well, the unaccented stem allomorph indicating 1_{PL}, 2_{PL}, the accented stem the other persons; e.g. *sedere* 'sit' in Table 8.9. The alternation was extended to verbs with the interfix *-isc-* (a Latin inchoative suffix that had lost its content); it was omitted in 1_{PL}, 2_{PL}, where it was unaccented; e.g. *capire* 'understand' in Table 8.9. Furthermore, the contrast 1_{PL}, 2_{PL} vs. other persons was extended to several near-synonymous verb pairs ('go' and 'walk'; 'exit' and 'make for the door'), which came to form suppletive stems; e.g. *andare* 'go,' *uscire* 'exit' in Table 8.9. Here no phonological conditioning can be imputed, for all the verbs involved would be subject to the same accent alternation. The inclusion of the suppletive stems in the existing pattern of stem alternations shows the alternating stems indicate the grammatical content of the endings (Klausenburger 2002: 33).

Maiden (2005, 2008) claims that 1_{PL} and 2_{PL} have no meaning in common that would set them apart from other persons. But 1_{PL} means 'the speaker and one or more others, addressee(s) or not,' and 2_{PL} means 'the addressee and one or more others, addressee(s) or not.' Thus 1_{PL} and 2_{PL} have multiply ambiguous reference potential in contrast to 1_{SG}, 2_{SG}, 3_{SG} and 3_{PL} whose reference potential is simple and unequivocal. It is interesting that this semantic contrast is indicated by alternating stems also in other Romance languages, where it has been developed in part independently. Thus the vowel

alternation in Fr. *meur-s.1SG*, *meur-s.2SG*, *meur-t.3SG*, *meur-ent.3PL*, but *mour-ons.1PL*, *mour-ez.2PL* ‘die’ parallels that in It. *sedere* (Table 8.9), but developed independently of it. Similarly Fr. *v-ais.1SG*, *v-as.2SG*, *v-a.3SG*, *v-ont.3PL* vs. *all-ons.1PL*, *all-ez.2PL* ‘go, walk’ is parallel to the suppletive paradigms in Table 8.9, but Fr. *aller* and It. *andare* have different origins; Fr. *aller* < **ambulare*, It. *andare* < **ambitare*.

Table 8.9 Italian alternation types

	1SG, 2SG, 3SG, 3PL	1PL, 2PL
Vowel alternation:	<i>sied-o</i> , <i>~i</i> , <i>~e</i> , <i>sied-ono</i>	<i>sed-iamo</i> , <i>sed-e-te</i>
Interfix ~ -Ø :	<i>cap-isc-o</i> , <i>~isc-i</i> , <i>~isc-e</i> , <i>cap-isc-ono</i>	<i>cap-iamo</i> , <i>cap-i-te</i>
Innovated suppletion:	<i>vad-o</i> , <i>~i</i> , <i>va</i> , <i>vad-ono</i> <i>esc-o</i> , <i>~i</i> , <i>~e</i> , <i>esc-ono</i>	<i>and-iamo</i> , <i>and-a-te</i> <i>usc-iamo</i> , <i>usc-i-te</i>

- (24) *Inflectional classes. Metanalysis.* Proto-Slavic inherits from Proto-Indo-European a system of noun classes, each defined by a stem suffix (‘formative’), originally meaningful, but within Slavic without discernible symbolic content. The formatives are weak indicators of

Table 8.10 Some Proto-Slavic nominal stem classes

PS	<i>o</i> -stems	<i>u</i> -stems	<i>Ā</i> -stems	<i>i</i> -stems
NOM.SG	* <i>plod-o-s</i>	* <i>dom-u-s</i>	* <i>gen-ā-Ø</i>	* <i>kost-i-s</i>
ACC.SG	* <i>plod-o-m</i>	* <i>dom-u-m</i>	* <i>gen-ā-m</i>	* <i>kost-i-m</i>
GEN.SG	* <i>plod-o-od</i>	* <i>dom-ou-s</i>	* <i>gen-ā-s</i>	* <i>kost-ei-s</i>
LOC.SG	* <i>plod-o-i</i>	* <i>dom-ōu-Ø</i>	* <i>gen-ā-i</i>	* <i>kost-ēi-Ø</i>
DAT.SG	* <i>plod-o-ei</i>	* <i>dom-ou-ei</i>	* <i>gen-ā-ei</i>	* <i>kost-ei-</i>
INS.SG	* <i>plod-ō-</i>	* <i>dom-u-mi</i>	* <i>gen-ā-m</i>	* <i>kost-i-jam</i>

Table 8.11 The OCS reflexes of the paradigms in (12)

OCS				
NOM.SG	<i>plod-ŭ</i>	<i>dom-ŭ</i>	<i>žen-a</i>	<i>kost-ŭ</i>
ACC.SG	<i>plod-ŭ</i>	<i>dom-ŭ</i>	<i>žen-ŏ</i>	<i>kost-ŭ</i>
GEN.SG	<i>plod-a</i>	<i>dom-u</i>	<i>žen-ŷ</i>	<i>kost-i</i>
LOC.SG	<i>plod-ě</i>	<i>dom-u</i>	<i>žen-ě</i>	<i>kost-i</i>
DAT.SG	<i>plod-u</i>	<i>dom-ovi</i>	<i>žen-ě</i>	<i>kost-i</i>
INS.SG	<i>plod-omŭ</i>	<i>dom-umŭ</i>	<i>žen-ŏ</i>	<i>kost-ŭjŏ</i>

noun gender; some show alternations conditioned by case; and they specify allomorphy in case endings. Thus although meaningless, they are rich in morphosyntactic information; see Table 8.10.

Through a number of Common Slavic sound changes, stem formatives fuse with case endings. As a consequence, the root-formative boundary becomes the new stem-ending boundary (metanalysis) and the index content of the formatives shifts to the new stems and endings (Table 8.11). The phonological definition of stem classes (*o*-stems, *u*-stems, etc.) changes to abstract specifications of case-allomorph sets (called First, Second, Third declension), and the endings indicate declension type. In time, their correlation with noun gender is strengthened, i.e. morphosyntactic indexing changes in the direction of content indexing.

4. Demorphologization

The term *demorphologization* subsumes the types of change by which grammatical affixes change into clitics or words or into expression elements with no grammatical function.

This definition of *demorphologization* is the reverse of that of *morphologization* (section 2). But the kinds of change subsumed under *demorphologization* lack the unity of morphologization changes. Purely morphosyntactic changes (emancipations; cf. section 1.5) of affix to clitic or clitic to grammatical word are not common, although they occur (see section 4.1). Most commonly, in demorphologizations, the reduction or loss of inflection (degrammation) accompanies a change in content or function of the inflectional sign in question (regrammation) (section 4.2), or it follows a reassignment of the given content or function to another expression or expressions (grammation, renewal), and the given inflectional expression either goes out of use or is reanalyzed as a meaningless part of another expression (degrammation) (section 4.3).

4.1 Morphosyntactic Emancipation

Several examples of affixes undergoing purely morphosyntactic change have been discussed in recent literature.

Some of these appear to be simply host changes. The Estonian dialectal question particle =*es.Q* changes from NP suffix (or, more likely, already enclitic) to Wackernagel enclitic (host change, from phrase to sentence), and subsequently to sentence-initial proclitic (= *es.Q* > *es.Q*=) (Nevis 1986, Askedal 2006: 61). The former change may have been motivated by a (content syntactic) change in

scope, the latter by language contact (Andersen 2008: 31). Another likely host change is the development of 'split infinitives' in English, where *to=* has changed from lexical clitic to VP clitic; e.g. . . . *wanted* [*quickly to=rearrange* . . . > . . . *wanted to=[quickly rearrange* . . . It is not accompanied by any change in expression, content, or content syntax (scope) (Fischer 1999; Andersen 2008: 30).

An affix > clitic change is the Russian extension of the 2PL suffix to the (1PL) hortative to specify plural addressee or politeness: *-t'e.2PL* > *=t'e.2PL* (17). At the same time it is extended to a number of other directives; e.g. *na(=t'e)* 'here you are,' *polno(=t'e)* [lit.: full] 'stop it!' (Andersen 2008: 8).

Affix > word changes are exemplified by Ir. *-mid/-muid* > *muid* 'we' (Roma 1999) and Gk. *ksana-* 're-' > *ksana* 'again' (Dosuna 1997); in the former change, the outcome is a grammatical word, in the latter a lexical word (Askedal 2008).

4.2 Demorphologization due to Rregrammation

When an inflected sign is ascribed different content or function through reanalysis (regrammation) its inflection may be reduced or lost (degrammation).

- (25) *Regrammation. Inflected definite article > focus marker.* The North Russian dialectal definite article *=ot.NOM.SG.M*, *=t-a.NOM.SG.F*, *=t-o.NOM.SG.NT*, etc. is described in (3). In central Russian dialects this has been regrammatized (pragmaticized) as an uninflected focus marker *=to.PCL*, freely appended to any focused constituent; e.g. *Vam.DAT sapogi=to počinit'.INF nado=by* [lit.: to:you boots=PCL repair need=PCL] 'You should have your boots repaired.' The regrammation entails a degrammation of the article's inflectional grams (case, number, gender).
- (26) *Regrammation. Inflected auxiliary > subordinator.* In Late Middle Russian (1500s) the inherited future perfect goes out of use, but it lingers on in legal prose in preposed conditional clauses. Here its auxiliary *bud-e.3SG* is reanalyzed as a bookish variant of the normal *es'i.COMP* 'if' (regrammation). The regrammation entails a degrammation of the auxiliary's inflectional grams (person, number). The bookish conditional *bud'* remains in use with declining frequency through the 1900s (Andersen 2006b).

4.3 Demorphologization Due To Degrammation

Demorphologization due to degrammation consists in the loss of an inflectional gram or grams (degrammation) or it follows a reassignment of inflectional content or function to another expression or expressions (grammation, renewal).

As a consequence, the given inflectional expressions either go out of use or are reanalyzed as meaningless expression elements (degrammation) (section 4.3).

(27) *Degrammation. Noun gender.* In Danish, the inherited three genders are preserved by some dialects (Funen), employed for agreement of attributive and predicative adjectives. But they are widely reduced to two noun genders, common and neuter, supplemented with the strictly phoric genders *MASC* and *FEM*; thus in the standard language. In the pronouns, *han.SG.MASC*, *hun.SG.FEM* refer to humans and larger animals; *den.SG.CMN*, *det.SG.NT* to nonhumans and inanimates; *de.PL* is gender-unspecific. In large parts of Jutland, gender is lost other than *han.SG.MASC* and *hun.SG.FEM* for humans and *den.SG.CMN* for nonhumans and inanimates. Here agreement is reduced to *SG* vs. *PL* number. (Skautrup 1944: 270, Andersen 1980).

(28) *Degrammation. Case.* The loss of the inherited case systems in parts of the Balkans, in Romance and in most of West and North Germanic has followed the reassignment of case functions to other means of expression—‘a variety of organisational devices, lexical, morphological, analytical, and topological’ (Schøsler 2008 in Eythórsson 2008). Among these are an extensive use of pronouns cliticized to the verb and of prepositional phrases, while a more or less restricted employment of word order (topology) to represent information structure allows for different degrees of reliance on word order for the representation of grammatical relations.

As case is degrammatized, nominal case endings are lost. Bulgarian, for instance, reduces its six-case system to three (nominative, accusative, dative) by the 1200s, preserves these in pronouns while subsequently conflating them in nouns, keeping only nominative forms (Češko 1970). French follows a similar development, generally keeping accusative forms of nouns, though traces of the *-s.NOM.SG.M* remain in masculine human nouns (e.g. *fiils* ‘son,’ *Charles*). In Danish, as elsewhere in West and North Germanic the *a*-stem *GEN.SG -s* is generalized for all nouns and both numbers; it is later reanalyzed as an enclitic determinative-phrase marker (Heltoft 2001, Askedal 2008). But in addition, Danish preserves remains of oblique-case noun-endings (*-e* and *-s*) in scores of lexicalized prepositional phrases. Since these former endings can no longer be ascribed content, the fossilized case forms cannot be segmented; they have the status of allomorphs; e.g. *år* ‘year’: *ad åre* ‘in years to come’; *tid* ‘time’: *i tide* ‘ahead of time’; *gård* ‘farm’: *af gårde* ‘off the farm’; *bord* ‘table’: *til bords* ‘to the table’ (Skautrup 1944: 267).

(29) *Degrammation. Person–number inflection.* In southern Serbia, the ‘future’ (or prospective aspect) auxiliary has a series of content-syntactic, morphosyntactic, and expression changes following the decline and loss of the infinitive. (i) The infinitive was replaced with a complement (*da*) clause: *ja=ć-u.FUT.1SG pisati.INF* ‘I’ll write’ > *ja=ć-u.FUT.1SG da piš-em.PRS.1.SG* ‘I will that I write.’ (ii) The auxiliary’s person–number inflection is gradually lost (degrammation), the 3SG form being generalized as an ‘impersonal’ (subjectless) predicate: *će.FUT da piš-em.PRS.1SG* [lit.: it will be that I write] ‘I’ll write.’ (iii) The subordinator *da* is gradually lost, and the future marker becomes proclitic to the inflected present tense: *će.FUT=piš-em.1SG*. In some dialects, future marker and subordinator fuse into *ća* (or *ka*). These changes are reflected with a great deal of synchronic variation in areal gradations in southeastern Serbia.

They have exact parallels in the history of Bulgarian and Macedonian and in the other Balkan languages. The development from Middle Greek (i) *thel-ō.FUT.1SG graphein.INF* > *thel-ō.FUT.1SG ina graph-ō.FUT.1SG*, (ii) > *thelei.FUT na graph-o.PRS.1SG* to, (iii) ModGk. *θα.FUT=graf-o.PRS.1SG* (details in Bănescu 1915) has been discussed as morphologization (Joseph 2003) and grammaticalization (Heine 2003). In terms of the conceptual framework used here, step (iii) is a morphologization, but steps (i) and (ii) have nothing to do with either morphologization (section 2) or grammaticalization (section 1.5). Step (i) is a syncretism of the syntactic paradigm *INF* clause vs. *da*-clause; step (ii) is a degrammation (of redundantly expressed person and number grams) (Andersen 2006c).

5. Conclusion. Diachrony and History

Morphological developments in languages can be observed from different perspectives. In a ‘whole-language perspective’ one can observe the *morphological cycle*, the cyclical developments in type, from analytic to synthetic (and agglutinative to fleective) and back to analytic (Hodge 1970). In a ‘subsystem perspective,’ one can observe long-term alternating developments of simplification and elaboration of, say, verbal categories as in (13). In a ‘single-element perspective’ one can chart the progression of macro-changes, such as grammaticalization or the individual category cycles such as the negation cycle. Some macro-changes have proven amenable to formal analysis and suggest possible learner’s strategies (Roberts and Roussou 2003, Gelderen 2004, 2008, Andersen 2008: 15–16).

In this brief survey it has seemed more useful to adopt a properly historical perspective. Here one meets a diversity of types of morphological change at a level of observation where the interpretation of the individual change requires

attention to the circumstances—external and/or grammar-internal—under which it arose and has been actualized and prompts questions about its initial innovation such as whether it conformed to existing rules of the language, whether it was motivated by surface ambiguities in received usage, whether it conformed to typological properties of the language or of a contact language, and whether it embodied some general principle of language manifested as a learner's strategy. It is questions such as these that will advance our understanding of the histories of languages.

Notes

1. The following abbreviations are used: Cat. (Catalan), Cz. (Czech), Da. (Danish), dial. (dialectal), Fr. (French), Gm. (German), Gk. (Greek), Ir. (Irish), lit. (literally), Mid (Middle), mod. (modern), o., O (old, obsolete), OCS (Old Church Slavonic), OOc. (Old Occitan), Pol. (Polish), Port. (Portuguese), Prov. (Provençal), PS (Proto-Slavic), reg. (regional), Russ. (Russian), SBC (Serbian–Bosnian–Croatian), Sn. (Slovenian), st. (standard), Sw. (Swedish), Turk. (Turkish).
2. In C. S. Peirce's sign theory, a symbol acts as a sign by virtue of a rule that relates the sign to its object and thus warrants its interpretation. An index acts as a sign by virtue of a contiguity or real connection, an 'existential relation,' between the sign and its object—an index asserts the existence of its object, it draws attention to it. An icon acts as a sign by virtue of a similarity between the sign and its object (Nöth 1990: 44, 113). While Peirce speaks of signs and their objects, I will follow linguistic tradition and speak of signs as comprising an expression (exponent) and a content (in morphology one or more grams) in addition to syntactic specifications.
3. Peirce distinguishes three kinds of iconic signs, images, diagrams and metaphors. The *image* represents simple qualities of its object. The *diagram* comprises relations that represent relations within its object. The *metaphor* represents its object by presenting features that suggest properties of the object (Nöth 1990: 123).
4. The two kinds of signs mentioned here are simple symbols and index-symbols; all linguistic signs are established by convention and depend for their interpretation on rules, i.e., they are symbols (in Peirce's terminology). For simplicity's sake I will speak of them as symbols and indexes.
5. The difference between these two types of change may be evident to the historical linguist, but it cannot be so to the language acquirer, who has no way of knowing which analyses are innovative and which not.
6. The change of *habeo* to future auxiliary is traditionally cited as an example of grammaticalization. But note that (i) Lat. *habeo* 'have' is a verb of existence, i.e., it is a grammatical verb; (ii) the modal *habeo* + inf. 'have to' is a grammatical verb; it results from a reanalysis (a regrammation) of an extension of *habeo* 'have'; (iii) *habeo* + inf. 'future' results from yet another reanalysis (regrammation). The regrammation of 'have to' as 'future' entailed a renewal of the deontic *habeo* + inf. 'have to' as *habeo delab* + inf., cf. It. *avete di ritornare*, Fr. *vous avez à retourner* 'you have to return.'
7. The pronominal clitics in such chains are sometimes called mesoclitics; the term seems to imply the interpretation that infinitive stem and future ending have been univerted.

9 Analogical Change

Livio Gaeta

Chapter Overview

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1. Analogy as a Linguistic Concept

Analogy has a long history as a concept inside and outside linguistics (cf. Best 1973, Anttila 1977, Itkonen 2005, Blevins and Blevins 2009). In historical linguistics the concepts of analogy and analogical change have traditionally been used in connection with the so-called Sturtevant's paradox (Sturtevant 1947: 109): 'Phonetic laws are regular, but produce irregularities. Analogic creation is irregular but produces regularity.'

Indeed, the paradox focuses on only one aspect of phonological change, namely its 'blind' effect on morphological paradigms. For instance, if we consider the phonological change which affected all intervocalic Latin sibilants: /s/ → [r] / V _ V, we obtain an increase in irregularity in several nominal paradigms: **honōs* 'honor' / **honōsis*, etc. > **honōs* / *honōris*, etc.¹ This is due to the limited role played by morphological paradigms in constraining the effect of phonological change. The term 'blind' refers exactly to this property of phonological change of applying across the board, regardless of any morphological context.²

Because of the effect of an analogical change morphological irregularity was eliminated by extending the stem form *honōr-* to the nominative as well: **honōs* > *honor*. However, this change did not affect all final sibilants, but only those

which displayed a paradigmatic, i.e. morphologically conditioned, alternation with rhotics. This reveals one main property of analogical change which has been repeatedly emphasized: its sensitivity to morphemes, i.e. to meaning and semantic content. Furthermore, analogical change did not take place in all possible target cases at once, but affected nouns in a word-by-word fashion. Put differently, analogical change does not display the rush expansive character which is typical of phonological change, but proceeds in a much slower way. In fact, not all possible targets have been affected by analogical change in Latin, as documented by words like *flōs* ‘flower’ / *flōris*, etc.

In this light, the opposition regular / irregular which is at the heart of Sturtevant’s paradox amounts to mirroring the basic difference between phonology (and phonological change) and morphology (and morphological change, see Chapter 8 in this volume). This has been termed ‘Hermann Paul’s dualism’ (cf. Wurzel 1988). We will come back to this point later.

On the other hand, analogical change has also been assumed in cases where no meaning is involved. A clear case again involves rhotics. In several varieties of English, both in Great Britain and in the United States, rhotics are commonly deleted word-finally—or better: in syllable-coda position—after certain vowels (cf. Paul [1880] 1995: 119, McMahon 1994: 39, Gaeta 2001):

- (1) a. /r/ → Ø / [ə, ɔ:, ɑ:, ɪə, eə, uə, ɜ:] _ C₀]_#
 b. *Hom*[ə] bores me *algebr*[ə] bores me
 c. *Home*[r] is difficult *algebra*[r] is difficult

However, deletion was blocked by a resyllabification process occurring in external sandhi, which caused the final rhotic to be parsed as the onset of the following syllable. Nonetheless, because of the neutralization caused by the deletion the speaker reinterprets every final vowel in (1b) as having an underlying rhotic. Subsequently, in the resyllabification context (1c) a rhotic may be erroneously introduced also when it did not originally occur. Such cases have been treated as instances of rule inversion, in which on the base of the surface data the speaker reinterprets the structural change in inverse terms with regard to the original change (cf. Vennemann 1972b):

- (2) Ø → [r] / [ə, ɔ:, ɑ:, ɪə, eə, uə, ɜ:]]_# [_ V

Finally, analogy has also been invoked for explaining syntactic changes. For instance, Harris and Campbell (1995) assume extension to be one of the three basic types of syntactic change. Since ‘extension might be seen as part of analogy as traditionally defined in the linguistic literature’ (Harris and Campbell 1995: 51), they assume *de facto* analogy to be one of the basic mechanisms of syntactic change.

In more general terms, analogy can be taken to be a general cognitive mechanism underlying grammar and language as well as other human faculties. From this viewpoint, it is not difficult to treat analogy as a general structuring principle of phonology, as for instance suggested by Anttila (1989: 88): ‘the regularity of sound change [and we can add: of any sound alternation, LG] is also analogical: when a sound x changes under conditions y in a word A , it also changes in word B under the same conditions.’ Similar assumptions have been made for syntax as well.

With the background of such a far-reaching perspective involving analogy, to which we will come back at the end of the chapter, let us briefly review the types of analogical changes discussed in the literature, by focusing on cases which have especially attracted the interest of historical linguists, namely those concerning morphology. In fact, this interest does not reflect an arbitrary choice, because ‘[t]here is evidence of word-based analogy in every language where analogical patterns have been investigated’ (Blevins and Blevins 2009: 5).

2. Types of Analogy

Several types of analogical change are traditionally distinguished in the literature, although the differences are not always clear, and much depends on our success in constructing the so-called four-part proportion. The latter is always present when an analogical extension is observed as in cases like the following one:

- (3) a. German *brauch-t* ‘needs’ > Colloquial German *brauch*
 b. *sollen* : *soll* ‘must’ = *brauchen* : X X = *brauch*
 wollen : *will* ‘want’
 ...

A certain pattern, the inflectional behavior of modal verbs in German, is extended to another verb, which originally followed a different pattern. What forces the analogical extension is a matter of discussion to which we will return in the following section, as well as the set of words which constitutes a possible target for the extension. Notice that this analogical extension has been invoked for any case of inflectional class change like for instance Old English *bōc* / *bēc* > MnE *book* / *books*, *sunne* / *sunnan* > *son* / *sons*, etc. on the basis of the very frequent pattern of OE *stān* / *stānas* ‘stone,’ or Classical Latin *senātus* ‘senate’ / *senātūs* > Late Latin *senātus* / *senātī*, *pondus* ‘weight’ / *ponderis* > *pondus* / *pondī* on the basis of the frequent *lupus* ‘wolf’ / *lupī*, etc. Moreover, all cases of extension of a pattern to encompass (or produce) a new item have been considered cases of analogical extension, for instance in word formation: *sentencehood* is coined on the

basis of the pattern instantiated by *nation* / *nationhood*, *syllabification* on the basis of *verify* / *verification*, etc. (cf. Hock 1991: 176).

A second type of analogical change is represented by leveling, which consists in the complete or partial elimination of morphophonemic alternations within paradigms like the one discussed above for Latin *honor*. Although this example may seem quite unproblematic, it has raised questions about the directionality of change. In fact, in this example we observe the extension of the stem form from the oblique cases to the nominative, in spite of the fact that the latter is generally taken to be the unmarked form which *ceteris paribus* should prevail over the others (cf. Wetzels 1986). In this case, however, it may be reasonable to solve the question of directionality by simply observing that the stem form *honōr-* occurs in the whole inflectional paradigm except for the nominative singular. So it is no surprise that the extension eliminated the less frequent (although unmarked) form. Furthermore, it is not difficult to reduce this leveling to a four-part analogy, as in (4):

$$(4) \text{ soror} : \text{sorōris} = X : \text{honōr-is} \quad X = \text{honor}$$

The influence of the *soror* pattern may also be helpful in explaining why the leveling did not spread to nouns like *flōs* / *flōris*, because the analogical pattern is based on polysyllabic non-neuter nouns like *soror*, while no monosyllabic models can be invoked for *flōs* (cf. Hock 1991: 180).

A much more difficult case for settling the question of directionality is provided by the singular and plural preterite forms of the following German verbs, in which allomorphy has been leveled out in two opposite directions, as in (5):

$$(5) \text{ a. sang} / \text{sungen} \text{ 'sang'} > \text{sang} / \text{sangen}$$

$$\text{ b. greif} / \text{griffen} \text{ 'grasped'} > \text{griff} / \text{griffen}$$

Apparently, the different directionality of leveling can be explained by the mechanism of homonymy avoidance, because in the case of *greifen* the leveling after the singular would have led to homonymy with the present forms (cf. Becker 1993: 13). However, similar cases of opposite directionality can be mentioned for Old English verbs like the following ones, in which no homonymic clash with the present occurred (Anttila 1989: 95), as in (6):

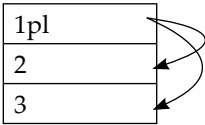
$$(6) \text{ a. rīte} / \text{rād} / \text{ridon} > \text{ride} / \text{rode}$$

$$\text{ b. bīte} / \text{bāt} / \text{biton} > \text{bite} / \text{bit}$$

Leveling may also relate to the suffix rather than to the stem. In this case we observe two different possibilities, again according to the directionality of leveling, which have to do with how words are organized in paradigms. In fact, one

of the major factors playing a role in analogical changes is paradigmatic strength, as Blevins and Blevins (2009: 3) generally observe: ‘paradigms are a central locus of analogy in grammar.’ In this light, a paradigm can be viewed in a vertical as well as in a horizontal dimension (cf. Gaeta 2007):

(7) Vertical leveling



Horizontal leveling



In the first type, a form is extended to other slots within the vertical dimension of the paradigm, as in the Upper Rhineland German, in which the ending *-ən* was generalized to the whole plural as shown below (cf. Schirmunski 1962: 523):

(8)

	OHG Present Indicative	Upper Rhineland German
1pl	<i>giloub-em(ēs)</i> ‘we believe’ >	[‘ <i>glaw-ən</i>]
2	<i>giloub-et</i> ‘you believe’	[‘ <i>glaw-ən</i>]
3	<i>giloub-ent</i> ‘they believe’	[‘ <i>glaw-ən</i>]

Leveling was probably favored in this case by a syncretism due to the parallel reduction of the 1st and 3rd ps.pl., cf. respectively *-em* > *-ən* and *-ent* > *-ən*.

A case of horizontal leveling matching the schema in (7) is provided by the Italian suffix *-iamo* of the 1st ps.pl.pres.ind. of all inflectional classes, which results from the extension of the original endings of the Latin subjunctives in *-eāmus* and *-iāmus* (second and fourth conjugation) first to the subjunctive and then to the indicative of all classes:

(9)

	Present Subjunctive	Present Indicative
1pl	(<i>-eāmus</i> >) <i>amiamo</i> ‘let us love’ →	<i>amiamo</i> (older <i>amamo</i> < <i>amāmus</i>)
2	<i>amiate</i>	<i>amate</i>
3	<i>amino</i>	<i>amano</i>

Horizontal leveling seems to be more frequent, as it is easy to multiply the examples and to reduce them to a proportional analogy. For instance, in Ancient

Greek the 3rd sg present form *phérei* 's/he brings' presents a zero marker instead of the expected ***phéresi* (from Indo-European **bhereti*) on the basis of the imperfect *éphere*. The extension is supposed to have been triggered by the similar endings of the 2nd Sg of the present and of the imperfect indicative on the basis of the proportion: *épheres* : *éphere* = *phéreis* : X (*phérei*, cf. Lehmann 1992: 220). However, such a formula is not available for the Italian case, whose explanation is still 'obscure' (cf. Maiden 1995: 128). Furthermore, both the Ancient Greek and the Italian leveling present a similar difficulty, because leveling goes from what is usually held to be a marked category to an unmarked one.

Other types of analogical changes are generally taken to be less systematic than these first two. A first example is given by contaminations. Although the latter are often referred to as sporadic or unsystematic analogy in the literature, they actually share a lot of systematicity with four-part analogy and leveling. Moreover, far from being rare, such cases 'are quite common . . . [b]ut their effect usually is much more "helter-skelter" than that of four-part analogy and leveling' (Hock and Joseph 2009: 161). On the other hand, leveling and analogical extension can also be sporadic, in the sense that they may affect a single word on the basis of a unique model. An example of such an extreme case is provided by the Elean Greek word *meú-s* 'moon' / *mēn-ós*, etc., whose nominative singular has been reshaped with respect to the expected ***meí-s* on the basis of the unique model provided by the word *Zeú-s* 'Zeus' / *Zēn-ós*, etc. (cf. Anttila 1989: 89).

A contamination can be found in the Middle Greek suffix for the 3rd pl. non-active past *-ondustan*, which goes back to an earlier form *-ondusan* reshaped under the influence of the 1st and 2nd pl. suffixes *-mastan* and *-sastan* (cf. Joseph 2005). Similarly, in Ancient Greek the nominative plural of the feminine *ā*-stems was reshaped on the basis of the nominative plural of the masculine *o*-stems **hoi lukoi* 'the wolf.NOM.PL' giving rise to **hai korwai* 'the maiden.NOM.PL' instead of the expected ***hās korwās* on the basis of the parallel forms attested for the respective accusative plurals, cf. resp. **tans korwans* 'the maiden.ACC.PL' and **tons lukons* 'the wolf.ACC.PL' (cf. Hock 1991: 199). Accordingly, a new morpheme *-ai* was recreated on the basis of its masculine counterpart instead of the expected ***-ās*. Notice that this contamination parallels a four-part analogy: *tons lukons*: *tans korwans* = *hoi lukoi* : X (*hai korwai*).

These two cases can be couched fairly well within the schemas seen above for leveling in (7) appropriately modified. In fact, a vertical contamination took place in the case of the Middle Greek suffix *-ondustan*, whereas the reshaping of the nominative suffix *-ai* in Ancient Greek can be considered a case of horizontal contamination. The difference between contamination and extension or leveling may sometimes be subtle, as shown by the two cases discussed above of the Elean Greek nominative *meús* and of the Ancient Greek feminine suffix *-ai*, assigned respectively to extension and contamination. To keep them distinct,

much depends on how far the extension either of a morpheme or of a part of it is likely to be assumed. Thus, in the case of Elean Greek we can see a leveling if we assume the extension of the stem-ending diphthong of *Zeús*. Accordingly, a morphological type was extended. On the other hand, we might also consider that the nominative *meús* was simply reshaped on the basis of (or contaminated by) the rhyming companion *Zeús*.

Contamination may also result in a purely phonological reshaping of a word on the basis of a close model. A classical example is provided by the word *father*, which is expected to have a voiced plosive ***fa[d]ler* resulting from the phonological change of Proto-Germanic **ð* > OE *d*. The observed *fa[ð]ler* is likely due to the influence of the semantically close word *brother*.

At any rate, even in such cases of lexeme-by-lexeme contamination we may observe horizontal influence, as for instance in pairs of antonyms like the Latin adjective *gravis* 'heavy' reshaped as *grevis* after *levis* 'light,' or vertical influence, as for instance in the case of numerals: cf. the dialectal Greek form *hoktō* 'eight' instead of the expected ***oktō* because of the influence of *heptá* 'seven' (cf. Hock 1991: 197).

Two other types of sporadic analogical change are backformation and folk etymology. In the first case, an analogy is established which allows the speaker to reconstruct a pseudo-derivational relation and to create a nonexistent derivational base, as in *to edit* < *editor*, *to burgle* < *burglar*, in which a verbal base form is extracted by dropping an alleged agentive suffix *-ar* which normally occurs in *driver*, *speaker*, etc. from the two loans respectively from Latin and French. Backformation can become quite productive, as shown by German reverbalsizations like *notlanden* 'to make an emergency landing' < *Notlandung* 'emergency landing,' *ehebrechen* 'to commit adultery' < *Ehebruch* 'adultery,' etc. Clearly, this depends on the analyzability of the alleged affixation and on the productivity of the noun > verb conversion which lies behind it. A by far more restricted, sporadic, case is illustrated by those examples in which backformation leads to the secretion of an alleged suffix, like in *pea* and *cherry* from the French loans *pease* and *cherries* (OF *peis* and *cerise*) where an alleged plural suffix has been stripped away.

A similar process of reanalysis also lurks in folk etymology, which leads to the remotivation of a word in more transparent parts, as shown by *sandblind* which goes back to OE *sām-blind* 'half-blind.' The semantic remotivation does not necessarily amount to providing a new transparent meaning to the word as speakers simply seek to replace elements of unfamiliar words with more familiar ones independently of the final outcome (see Chapter 17 in this volume). However, we also find cases in which a true remotivation has taken place as a consequence of folk etymology, as in German *hantieren* 'to handle,' which is a loan from Old French *hanter* 'to stroll about' and has been remotivated on the basis of the word *Hand* 'hand.' In some cases, a pattern can also become

productive and analogically extended, as in *Hamburger (Wurst)* 'sausage from Hamburg' > *ham+burger* by folk etymology and subsequently *cheese+burger*, *fish+burger*, etc.

3. Laws of Analogy?

So far we have been discussing several types of analogical change without raising the general question which lurks behind it, namely: which factors allow us to establish the attractor pattern? This also entails a subordinate question regarding the directionality of the analogical change.

Several attempts have been made to discover general principles or laws which would enable us to make predictions (of course, always relating to the how or why of a change, never to the when!) on possible analogical changes. Classical reference works are Kuryłowicz (1947) and Mańczak (1958), who carefully investigated a considerable number of cases of analogical changes in several (mainly European) languages. Thus, even if we cannot attribute a statistical significance to their results, their findings are largely supported empirically. Kuryłowicz's six 'laws' and Mańczak's nine 'tendencies' mainly deal with the question of directionality leaving in the background the question of the attractor pattern. Notice that the label 'law' adopted by Kuryłowicz is inadequate not only because exceptions against the alleged laws are easy to find, but also because we have already seen that analogical change, compared to sound change, usually takes place in a word-by-word fashion, thus intrinsically displaying the character of a tendency rather than the mechanism of a law.

We can summarize Kuryłowicz's and Mańczak's contributions by pointing out three main tendencies which are still valid after analytic discussion (cf. Hock 1991, Chapter 10; McMahon 1994: 80). First, there seems to be a tendency for some categories (i.e. morphological contents) to be more basic (or less marked) than others. This explains the preference for a certain directionality in analogical change. For instance, we have seen in (5) above that in German preterites leveling normally goes from the singular to the plural. Another similar example can be taken from Provençal, in which the inflectional endings of the preterite *cantém* 'we sang' > *cantétem*, *cantétz* 'you sang' > *cantétei*, *cantéren* 'they sang' > *cantéten* have been reshaped on the basis of the 3rd person singular *cantét* 's/he sang,' generally taken to be the unmarked form (cf. Bybee 1985: 39). However, exceptions to this tendency can be mentioned, as is the case of the verb *greifen* in German and the English preterites seen in (5–6) above.

Second, there is a general preference for more explicit marking over less explicit marking as in the English -s plural in *books* with respect to OE *bēc*, in which the additive marking may be seen as more explicit than the stem vowel alternation. The extension of the stem vowel alternation in German plurals like

Baum 'tree' / *Baum-e* > *Bäume* after the model of *Gast* 'guest' / *Gäste* can also be considered a case of more explicit marking, because the vowel alternation reinforces an already present additive marking.

Finally, there seems to be a tendency to reduce multiple expression (including allomorphy) of the same morphological content inside and outside paradigms. This seems to hold true both for analogical extension (cf. again the case of the extension of the English -s plural) and for leveling (cf. the case of Latin *honor*).

All these preferences can be captured by the same principle, called the 'principle of constructional iconicity' or 'Humboldt's universal.' Indeed, the two names highlight two different aspects of the question. To put it in a nutshell, the principle of constructional iconicity claims that more form should correspond to more meaning, while Humboldt's universal claims that one form should correspond to one meaning.

In general, these claims have to be treated in the broader frame of markedness, as understood by scholars like Nikolaj S. Trubetzkoy and Roman Jakobson (cf. Andersen 1989 for a survey). In particular, Jakobson has elaborated further on Trubetzkoy's comprehension of markedness by adopting the semiotic reference frame of Charles S. Peirce (cf. Jakobson 1965). In Peirce's view, iconicity means that the signs are motivated in that their formal structure mirrors or makes reference to their referential content: a clear case is provided by onomatopoeic forms, which partially mimic some vocal aspect of the referent. A more subtle (or abstract) case of iconicity is provided by the so-called diagrams, in which the referential content is hinted at by the makeup of the sign. Iconicity in morphology refers to this latter definition, and implies additive (i.e., affixation) marking to be preferred over non-additive marking (such as zero-affixation, inner root alternations like apophony, and subtraction). In other words, a semantic 'more' must correspond to a formal 'more,' which lies at the heart of the principle of constructional iconicity.

Clearly, in order to assess the semantic 'more,' it is necessary to have an idea of what is semantically more basic or unmarked. Although the latter is not always as clear-cut as one would like to have it,³ we can at least agree upon singularity being more basic than plurality. Accordingly, singulars are expected to be less marked than plurals. Notice that the apparent paradox given by the fact that for instance the plural of a word like *sheep* / *sheep* has to be treated as more marked than the plural of *boy* / *boys* disappears if the original German terms suggested by Jakobson are considered. In this regard, he carefully distinguishes between 'markiert / unmarkiert' as corresponding to basic / complex and 'merkmalhaft / merkmallos' as corresponding to feature-bearing / feature-lacking. Thus, in the ideal case we should expect that what is 'markiert' should also be 'merkmalhaft,' namely an isomorphism between the formal and the content level. Violations of this principle may occur, as shown by *sheep* / *sheep*, but

are predicted to be unproductive, and/or to presuppose iconic morphological marking in the rest of the inflectional system.

The other principle refers to an iconic isomorphism according to which uniform coding is preferred over non-uniform coding; this is captured by the formula one form—one meaning. Such isomorphism is maintained as far as possible, and it is reestablished after its disruption by sound change with the help of Humboldt's universal. Accordingly, '[s]uppletion is undesirable, uniformity of linguistic symbolization is desirable: Both roots and grammatical markers should be unique and constant' (Vennemann 1972a: 184). Notice that this principle in a way updates Sturtevant's paradox by promoting it to an 'innate principle of linguistic change,' very much in Paul's sense of a general striving towards the symmetry of the system: 'Thus, sound change struggles against the symmetry of the form system as an inexorably acting enemy and destroyer . . . Where a gratuitous and inappropriate difference arises through sound change, it can be eliminated with the help of analogy' (Paul [1880] 1995: 198, my translation).⁴

Even though this view is attractive, it is not entirely clear what the symmetry of the system should mean. In fact, iconic isomorphism (spelled out along both dimensions of constructional iconicity and Humboldt's universal) does not seem to be sufficient to account for a number of analogical changes. For instance, we have seen in (3) above that non-iconic marking is introduced as a consequence of analogical change: *braucht* > *brauch*. For this reason, in a theoretical framework which makes crucial reference to iconicity as a basic ingredient, such as Natural Morphology, it is customary to distinguish between a universal, system-independent naturalness and a specific system-dependent one (cf. Dressler 2003). In this framework, naturalness is equated with constructional iconicity in the sense defined above. Accordingly, the strong prediction is made that language change should run towards more naturalness, i.e. more iconicity.

However, such a general statement must be adapted to the specificity of a given linguistic system. In particular, the tendency towards universal naturalness seems to weigh very differently for derivational and for inflectional morphology. For the latter, the paradigmatic strength seems to be more enhanced, as for instance suggested by Plank (1981: 31) by means of the following implication: If a certain stem alternation is leveled in a derivational paradigm, then it is also leveled in the corresponding inflectional paradigm but not vice versa. Thus, the outcomes of Proto-Germanic **h* were different depending on the preceding (palatal or velar) vowel. The alternations still occurring in Middle High German only survive in derivation (10c), but have been leveled out in inflection (10a):

- (10) a. *sihe* 'I see' / *sach* 'he saw' > *sehe* / *sah*
b. *nah* 'near' / *näher* / *nächst*, *hoch* 'high' / *höher* / *höchst*
c. *sehen* 'to see' / *Sicht* 'sight', *hoch* 'high' / *erhöhen* 'to heighten'

Relics of this alternation can only be observed in the case of adjective gradation (10b), which clearly shows the intermediate status, between inflection and derivation, of this inflectional category.

In general, system-dependent naturalness is defined in terms of system adequacy which accounts for a particular morphological system on the basis of its own structural properties (cf. Wurzel 1989). System adequacy is spelled out by means of specific system-defining properties which express the normalcy of the system. A stable morphological system tends to have inflectional paradigms anchored by well-defined extra-morphological (i.e., phonological, semantic, syntactic) properties, which make the morphological relations between (nets of) words easily accessible and learnable. Thus, the extension of the inflectional class of *lupus* / *lupī* to *senatus* / *senatūs* > *senatī*, etc. simplifies the inflectional system, because that inflectional pattern is strictly associated with the extra-morphological property given by the ending *-us*.

Analogy has a basic economic effect on a morphological system in that it generally extends the domain of application of extra-morphological properties (cf. Gaeta 2006). By spelling out the conditions for system adequacy, we are able to predict the conditions for analogical changes to take place. In this light, the role played by analogy is a central one in favoring the organization of paradigms. Thus, the German verb *brauchen* can be said to have acquired the extra-morphological property of being modal. As a consequence, it has also acquired the properties of the other modals. This is confirmed by the acquisition of a further property specific of modals, namely the government of a bare infinitive: *Karl brauch nicht kommen* 'Karl need not come.' The high specificity of the extra-morphological property justifies the anti-iconic effect of the analogical change.

However, given the very specific nature of system-dependent naturalness, it is unclear to what extent it is harmonic with the general principles of iconicity. It may also be the case that an analogical change systematically runs against iconicity, as for instance in Milanese where feminine nouns ending in *-a* display a subtractive plural marking like *la scarpa* 'the shoe' / *i scarp* (cf. Salvioni 1975). This is due to a phonological change which deleted all final /e/. In spite of its anti-iconic nature, the subtractive plural is extended to other feminines as well like **vest* 'cloth' / *vest* > *vesta* / *vest*, **carn* 'meat' / *carn* > *carna* / *carn*, etc. In this case too, a more systematic distribution (i.e., all feminines explicitly marked by means of the ending *-a*) is reached at the cost of reducing iconicity.⁵ Therefore, iconic marking is subordinated to the system adequacy of a certain morphological coding, which emphasizes the priority of system-dependent naturalness over the universal dimension of naturalness.

One corollary of this conclusion is that very specific information may be of relevance for determining the directionality of analogical extensions. In this connection, Wurzel (1989: 70) explains the extension of the stem vowel

alternation typical of words like *Gast* 'guest' / *Gäste* to words like *Baum* 'tree' / *Baume* > *Bäume* by simply considering the larger type frequency of the lexical set of *Gast*. No appeal to any extended iconic marking seems to be necessary. The opposite direction might also have been possible if the frequency relations were inverse.

4. Analogy as an Emergent Force

To summarize, analogical change seems to favor paradigmatic systematicity in that idiosyncratic patterning is eliminated in favor of more general (and frequent) patterns. Extending Paul's dualistic view of a local improvement of opaque outcomes of phonological change with the help of a sense for systemic symmetry, language can be viewed as resulting from the analogical generalization of salient and/or frequent patterns. In other words, analogy can be considered to be an emergent force: language (and the process of language acquisition) can be seen as resulting from output-oriented generalizations on the basis of an entrenched model (cf. Blevins and Blevins 2009).

This view of analogy as a cognitive ability underlying the faculty of language has given rise to a long-lasting debate concerning the nature of productivity and of rules. In fact, as pointed out among others by Becker (1990), rules and analogy are not conceptually different in the sense that a rule can be translated into a four-part analogy and vice versa. Thus, one may wonder whether two different concepts must be assumed or whether we can reduce the inventory and simply adopt analogy for any kind of regular, in the sense of rule-governed, pattern. Furthermore, we have seen that analogical extension has been also invoked for cases like *nationhood*, *verification*, etc., which are also considered typical examples of productive word formation rules. Should we really put the case of Latin *honor* and of *nationhood*, *verification*, etc., into the same basket of analogy? Or should we rather keep the latter case aside?

Plag (2003: 38) argues radically against merging the two concepts together by observing first that the concept of analogy is incapable of accounting for 'the systematic structural restrictions . . . that are characteristic of derivational processes, and which in a rule-based framework are an integral part of the rule.' Second, 'it is unclear why certain analogies are often made while others are never made' while in a rule-based system 'this follows from the rule itself.' Thus, he maintains that analogy is found in cases like folk etymology and back-formation, while core examples of word formation are kept under the domain of rules.

Although this distinction may have some usefulness, in that it aims at keeping the highly productive application of a pattern distinct from more sporadic and unsystematic manifestations, it is unclear how far the theoretical

distinction can really be maintained given that '[t]he arguments for and against analogy seem to cancel each other out to a large extent' (Bauer 2001: 96). In fact, we have seen that some analogical changes emerge in the context of very frequent patterns like the inflectional class changes of *boc / bēc > books*, etc., or of *senatus / senatūs > senatī*, etc., while others only affect single words on the basis of a single pattern like in the Elean Greek *meús*. Thus, any analogy seems to be possible provided that an improvement in terms of the systematicity of a certain paradigm is aimed at. Notice that paradigmatic strength is not only limited to inflectional morphology but may be of relevance for analogical changes in derivational morphology as well. For instance, the French word *amour* 'love' has been leveled after the derivatives *amoureux* 'in love,' *amourette* 'affaire,' etc., instead of the expected ***ameur* resulting from the fronting of the original Latin /o(:)/ in open stressed syllables: *sōlus > seul* 'lonely,' etc. (cf. Plank 1981: 34). Furthermore, we have seen that systematic structural properties may be at the heart of analogical changes, as in the case of the German modal *brauchen* discussed above.

Finally, the difference between analogy and rules may simply be seen in terms of different connotations resulting from a shift of interest from the observation of patterns to the generative capacity of producing them as programmatically endorsed by Chomsky's view of a rule-governed creativity, even though 'the original substance is very much the same' (cf. Anttila 1989: 106). Indeed, 'it could be that speakers work with analogy, but that linguists' descriptions of the output of this behavior are in terms of rules . . . It may also be that rule systems presuppose analogy: they must start somewhere!' (Bauer 2001: 97).

At any rate, a quality which analogy does not share with rules is that it can refer to local relations among forms, for instance of a 'vertical' or of a 'horizontal' type. In this light, we have seen that aiming at a better organization of paradigms, analogy introduces local optimization, which has the effect of increasing the local similarity of two items. This holds true for proportional (extension, leveling) as well as for non-proportional (contamination, folk etymology) changes. They all basically follow the same strategy of saving energy costs of lexical storage by generalizing morphological (or sub-morphological) types. Accordingly, their aim is not to increase unsystematicity, i.e. to make the system more chaotic: recall Paul's systemic symmetry, but rather to reduce formal differentiation. This quality, which more generally consists in identifying and expanding similar recurrent patterns, seems to characterize our cognitive capacity in very general terms (cf. Jackendoff 2007: 17). Along these lines, it might be suggested that analogy also underlies the general property which Hauser et al. (2002) claim to be at the heart of the faculty of language in the narrow sense, namely recursiveness. In this sense, analogical models of language offer a better chance to grasp the forces which underly our cognitive abilities, and among them language.

Notes

1. However, the reader may ask why we still have cases of intervocalic sibilants in Latin as in words like *rosa* 'rose' and others (see Anttila 1989: 59–60 for a general picture). Following the logic of sound laws, we may only explain this irregularity away, if for instance we assume this word to have entered the Latin lexicon after the end of the effect of the phonological change. This assumption is borne out by the historical evidence: *rosa* is a loanword probably of a Greek origin.
2. On the other hand, we know that phonological rules may be sensitive to morphological information, although of a very specific kind, namely morphological boundaries. To make just one example, in Northern Italian a voicing rule affects all intervocalic sibilants: *co[z]a* 'thing,' *ca[z]a* 'house,' etc. (cf. Standard Italian *co[s]a*, *ca[s]a*). However, a morphological boundary has the effect of blocking the voicing rule, as in the prefixed words *a[s]ociale* / ***a[z]ociale* 'asocial,' *a[s]immetrico* / ***a[z]immetrico* 'asymmetric,' etc.
3. In this regard, cf. Andersen (2001b: 36) who assumes and empirically justifies in each speaker's competence 'a comprehensive network of association that readily relates unmarked terms with unmarked, and marked with marked terms across categories, in part without regard to the substantive character of the categories, in part, apparently, constrained by reference to the substantive content of some categories.'
4. 'Der Symmetrie des Formensystems ist also im Lautwandel ein unaufhaltsam arbeitender Feind und Zerstörer gegenüber gestellt . . . Wo durch den Lautwandel eine unnötige und unzweckmäßige Differenz entstanden ist, da kann dieselbe mit Hilfe der Analogie beseitigt werden'.
5. It must be added that this state of affairs is not tolerated in other close dialectal varieties like Bergamasco where a plural suffix *-i* is extended from the masculine nouns: *dona* 'woman' / *doni*, *scarsela* 'pocket' / *scarseli* (cf. Lurati 1988: 498).

10 Change in Grammatical Categories¹

Vit Bubenik

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1. The Nominal Categories in Afro-Asiatic Languages

1.1 Introduction

The Afro-Asiatic phylum of languages (formerly Hamito-Semitic or Semito-Hamitic) has the claim on the earliest written records accompanying some of the greatest achievements in the history of humankind. The hieroglyphic documents of Old Egyptians reach back to *ca.* 3000 BC, and the Akkadian and Eblaite cuneiform documents go back to the middle of the third millennium. The Semitic family of the Afro-Asiatic phylum (Lipiński 1997) possesses documents from the second millennium BC (Ugaritic, Aramaic), first millennium BC (Hebrew, Phoenician) and first millennium AD (Classical Arabic, Ethio-Semitic). The other families of the Afro-Asiatic phylum—Berber, Chad, Cushitic, Omotic (and possibly two or three more, cf. Hayward 2000: 74–98) have been documented only quite recently during the nineteenth century (there are some Moroccan Berber documents from the seventeenth century and there are a few Old Libyan inscriptions from the Roman centuries). Given the great time-depth of the Afro-Asiatic phylum (prior to 8000 BC according to Diakonoff, 1988: 25) and the late attestation of the several of its families prevent us from reaching firm conclusions about the development of its nominal and verbal categories which would be comparable with our knowledge of the Indo-European phylum.

Further progress in this area depends crucially on a further synchronic and diachronic work done on those other families—reconstruction of Proto-Berber (cf. Prasse 2003: 41) and Proto-Chad (a necessary prerequisite for it is the classification of *ca.* 140 Chadic languages into four groups, available in Newman 1980). The situation within the Cushitic family comprising six groups of languages is extremely complex; its various ‘nodes’/subgroupings are still being discussed (cf. Hayward 2000 and Tosco 2003): Northern group (Beɣawye/Beja), Central (Agaw languages), Highland East Cushitic (Sidamo, etc.), Lowland East Cushitic (with three subgroups: Saho and Afar, the Oromoid subgroup, and Omo-Tana where Somali belongs), Dullay, and Southern Cushitic (e.g. Iraqw). Omotic data allow for the distinction of the North (Dizoid and Gongga-Gimojan) and South subfamilies (but many scholars do not consider Omotic to belong to the Afro-Asiatic phylum).

Within the precincts of the chapter we have to concentrate on Semitic, the best understood family of the Afro-Asiatic phylum, whose unbroken literary documentation over the four millennia will allow us to make some significant observations on the change in its nominal and verbal categories. Diachronically, the Semitic family can be studied in three stages: Ancient (with the external nominal and verbal inflection well preserved); Middle (with the partial loss of the external nominal and verbal inflection) and New (with a complete remodeling of the morphological system). A few words on its threefold partitioning are in order (following Hetzron 1997): Northeast subfamily (Akkadian), Northwest subfamily with Central (Aramaic) and South Central branches (Canaanite: Ugaritic, Hebrew, Phoenician and Arabic) and South Semitic (South Arabian and Ethio-Semitic). Ethio-Semitic consists of a North branch (extinct literary Geez, Tigre and Tigrinya) and a South branch (Amharic, Harari and a number of ‘Gurage’ languages/dialects).

The following nominal categories of Afro-Asiatic languages are discussed: Gender and Nominal Classes, Number, Case, State and Definiteness.

1.2 Gender and Nominal Classes

Afro-Asiatic languages distinguish two grammatical genders. In the Semitic branch the masculine possesses no special suffix, while the feminine displays the suffix $-(a)t-$:

(1) Akkadian	šarr-	‘king’	šarr-at-	‘queen’
Ugaritic	il	‘god’	il-t	‘goddess’
Arabic	malik	‘king’	malik-at	‘queen’
Geez	bəʔəsī	‘man’	bəʔəsī-t	‘woman’

The feminine suffix is polysemous in that it can denote singulatives (= *nomina unitatis*), diminutives, collectives and abstractions:

(2) Arabic	waraq	'leaves'	waraq-at	'leaf'
	samak	'fish'	samak-at	'a fish'
Hebrew	ʔonī	'fleet (of ships)'	ʔoniyy-āh	'a ship'
Syriac	yam-ā	'sea'	yamm-ətā	'lake'
Arabic	baḥḥār	'sailor'	baḥḥār-at	'crew (on a ship)'
Akkadian	pulx-	'fear'	pulux-t	'fear'

The feminine gender does not have to be overtly marked. This well-known phenomenon of heteronymy is found with some 'very old words' (Diakonoff 1988: 58) denoting female beings as in Arabic *himār* 'he ass' vs. *ʔātān* 'she-ass'; in Arabic even the word for 'pregnant' does not display the feminine suffix:

(3) al-marʔ-at al-hāmīl 'the pregnant woman'

There is also the fairly common phenomenon of masculine nouns with feminine suffixes (cf. Latin *agricol-a bon-us* 'a good peasant,' Russian *dobr-yy vladyk-a* 'a good ruler') and feminine nouns without feminine suffixes:

(4) xalīf-at	'caliph'	(Arabic)	
ʔallām-at	'learned man'		
raḥḥāl-at	'traveller'		
(Feminine)	nafs 'soul'	(Arabic)	nepeš (Hebrew)
	ʔarḍ 'earth'		ʔereš

(But it should be observed that Akkadian treats the above two nouns as overt feminines: *napiš-t* 'soul' and *erš-et* 'earth').

In Akkadian there does not appear to be any semantic difference between masculine and feminine forms of certain nominal patterns deriving abstractions (cf. *pulx-* (Masc) ~ *pulux-t* (Fem) 'fear' in (2)).

A remarkable phenomenon of Common Semitic is the treatment of the names of body parts which exist in pairs (or in even numbers such as 'teeth') as feminines: *ʔayn- 'eye,' *ʔuḏn 'ear,' *yad- 'hand,' sinn- *'tooth.'

And, finally, the nouns denoting places, ways and certain natural phenomena are treated as feminine nouns as shown by their adjectival agreement:

(5) Akkadian xarrān- 'road, path, expedition, caravan'
nār - 'river' (vs. *nahr-* (Masc) in Arabic)

Arabic	šams-	'sun' (vs. <i>šamš-</i> (Masc) in Akkadian; Hebrew <i>šemeš</i> is ambigena)
Hebrew	šir-	'town'

In Arabic most toponyms are treated as feminines (*dimašq-* 'Damascus,' *Tūnis-* 'Tunisia') and there are a number of words which can be either masculine or feminine: *sūq-* 'market,' *sikkīn-* 'knife,' etc.

In Arabic there are two other feminine suffixes, namely *-ā?* and *-ā (< -ay)*, used for the formation of colors and adjectives denoting bodily/mental 'abnormalities':

(6)	Masculine	Feminine
'red'	aḥmar	ḥamr-ā?
'stupid'	aḥmaq	ḥamq-ā?
'thirsty'	ʕaṣ-ān	ʕaṣ-ā
'bigger'	akbar	kubr-ā
'pregnant'		ḥubl-ā

The suffix *-ā (< -ay)* has a counterpart in Hebrew and Syriac *-ay* (Hebrew *šāray* 'lady'); *-ē (< -ay)* is also found in the feminine forms of the compound numerals from 11 to 19: *laḥat ʕešrē* 'eleven' etc.

A propos counting, the so-called 'law of polarity' captures the unusual phenomenon (from the point of view of IE languages) that in Semitic languages the cardinal numbers from three to ten combine the unmarked (masculine) form with the feminine counted object, on the one hand, and the feminine form with the masculine counted object, on the other hand:

(7)		'five men'		'five girls'
Arabic	xams-at-u	riḡāl-in	xams-u	ban-āt-in
	Five.FEM.NOM	man.PL.GEN	five.NOM	girl.PL.GEN
Hebrew	ḥamišš-āh	ʕanāš-īm	ḥāmēš	bān-ōṭ
	Five.FEM	man.PL	five	girl.PL

Here we are dealing with the singulative alloeme of the feminine suffix *-(a) t*, i.e. '(the group/unit) of five men' (*nomen unitatis*); hence the genitive suffix on its determiner *riḡāl-in* 'of the men.' The traditional parsing with the FEM does not do justice to this semantic issue, and it should be replaced with SINGULATIVE. All this is quite different from the situation familiar from Ancient IE languages (Sanskrit, Old Church Slavonic) where the numerals 'three' and 'four' behave as adjectives agreeing in gender, number and case (e.g. Sanskrit *tray-o nar-āḥ* 'three men,' *tisr-o nāry-aḥ* 'three women,' OCS *četyr-e mōž-i*,

četyr-i žen-y ‘four men,’ ‘four women’); and there is no gender distinction in cardinal numerals higher than ‘five.’

1.3 Number

1.3.1 ‘Sound’ (External) Plural

The masculine external plural of Akkadian (*šarr-um* ‘king,’ Pl *šarr-ū*) and Arabic (*fallāh-un* ‘farmer’ Pl *fallāh-ūna*) is commonly understood as based on the lengthening of the case suffix (Nominative *-u* > *-ū*, Genitive *-i* > *-ī*). Zaborski (1976), however, argued for the existence of an Afro-Asiatic plural suffix containing a labio-velar glide *-w*: Akkadian *šarruu* < **šarru-w*; Egyptian *ʕnh* ‘oath’ (< **ʕanaḥ-u*), Pl *ʕnh.w* (< **ʕanaḥu-u*); Berber (Tashelhiyt) *im-i* ‘mouth,’ Pl *ima-aw-ni*; Highland East Cushitic (Hadiya): *kin-a* ‘stone,’ Pl *kin-uwwa*; Lowland East Cushitic (Afar) *lubak* ‘lion,’ Pl *lubak-wa*; Chad (Hausa) *kunn-ee* ‘ear,’ Pl *kunn-uuwà*.

In Ethio-Semitic the masculine external plural suffix is *-ān*, limited to the adjectives, participles and certain nouns, e.g. *masīh* ‘Messiah,’ Pl *masīh-ān*. (We shall see in (9) and (10) masculine nouns forming the broken plural by adding to it the feminine singular suffix *-t*).

In Akkadian the same suffix is used with a limited number of nouns yielding minimal pairs such as *šarr-ū* ‘kings’ vs. *šarr-ānu* ‘some kings, the kings taken individually,’ *il-ū* ‘gods’ vs. *il-ānu* ‘some gods, the gods taken individually.’ It appears that this pluralizing suffix started as an individualizing anaphoric suffix (as in *nādin-ānu-m* ‘the seller (of the previously mentioned thing),’ cf. von Soden 1952: 70). The parallel process of grammaticalization is observable in Classical Arabic. Here the adjectival derivational suffix *-ān* (as in *sakr-ān* ‘drunk,’ *ʕury-ān* ‘naked’) functions as the pluralizing suffix in conjunction with broken plurals (*axu-* ‘brother,’ Pl *ixw-ān* ‘brethren’ vs. *ixw-at* ‘brothers’; *ṭawr-* ‘bull,’ Pl *ṭīr-ān*).

1.3.2 ‘Broken’ Plural and Collective Nouns in Arabic and Ethio-Semitic

One of the salient features of Arabic and Ethio-Semitic (Geez) is the multiplicity of their plural formations. In Classical Arabic in addition to regular ‘sound’ external plurals (*-un* Masc Sg, *-ūna* Masc Pl; *-at-un* Fem Sg, *-āt-un* Fem Pl) various grammars distinguish up to 23 internal ‘broken’ plural patterns without seemingly any regular relationship to the singular vocalic pattern. In practical terms Arabic dictionaries have to list plural forms of most nouns since the broken plural is for all purposes rather a lexical category. The commonest 12 patterns of Classical (following Abu-Chacra 2007: 144) are displayed in (8):

(8)	Plural		Plural
bāb ‘door’	abwāb	malik ‘king’	mulūk
kabīr ‘big’	kibār	šahr ‘month’	ašhur

ʔax ‘brother’	ʔixw-ān	mabna ‘building’	mabāni
suʔāl ‘question’	asʔil-at	ʔarīq ‘road’	ʔuruq
ʔāmil ‘worker’	ʔummāl	nabiyy ‘prophet’	anbiy-āʔ
risāl-at ‘letter’	rasāʔil	qišš-at ‘story’	qišaš

Ratcliffe (1998) surveyed a number of previous studies devoted to this issue and proposed to classify the singular-plural opposition into seven major groups (falling into three larger classes):

Groups (1) and (2) consist of masculine CVC(V)C and feminine CVC(V)C-*at* underived triconsonantal (or shorter) nouns (*malik*, *qišš-at*) whose plural is marked by a vowel in the second syllable (*mulūk*, *qišaš*).

Group (3) includes quadriconsonantals (not shown in (8)) whose plural CaCāCi(i)C is both regular and productive (*ʔaqrab* ‘scorpion’ Pl *ʔaqrārib*).

Group (4) includes singulars with three consonants and a long vowel in the first or the second syllable which form plural according to (3) (*risāl-at*, Pl *rasāʔil*, *xātam* ‘signet ring,’ Pl *xawātim*).

Groups (5) and (6) comprise (lexicalized) derived nouns with a long vowel which do not take either the sound plural or the Group (4) type plural (*ʔālīb* ‘student,’ Pl *ʔullāb* or *ʔalab-at*). In group (6) Ratcliffe includes verbal adjectives and nouns with ‘transfixes’ CaCi/ūC and CVCāC (*wazīr* ‘vizier,’ Pl *wuzar-āʔ*; *rasūl* ‘messenger,’ Pl *rusul*; *suʔāl*, Pl *asʔil-at*). These plurals are generally irregular.

Group (7) includes a small class of special adjectival types (relational adjectives and a class indicating colors and mental/bodily ‘abnormalities’) (*aḥmar* ‘red,’ Pl *humr*; *aʔraʔ* ‘lame,’ Pl *ʔurj* or *ʔurj-ān*).

In Geez several patterns correspond closely to those of Classical Arabic (*ʔayf* ‘sword,’ Pl *ʔasyāf*; *wald* ‘boy,’ Pl *wəʔud*, quadriconsonantal *kanfar* ‘lip,’ Pl *kanāfər*), but a salient feature of the Geez system is the combination of the broken plural with the suffix *-t* which otherwise is used to denote feminine nouns:

(9) ʔaqrab ‘scorpion’	ʔaqrāb-t ‘scorpions’	(Geez)
nəguś ‘king’	nagaś-t ‘kings’	
nəgəs-t ‘queen’	nəgəs-t-āt ‘queens’	
tamar-t ‘date palm’	tamar-t-āt ‘date palms’	

The masculine monosyllables of the pattern CVCC drop the V and insert /ə/ between the second and the third C (data from Leslau 1987):

(10) nəsr ‘eagle’	ʔansər-t ‘eagles’	
qarn ‘horn’	ʔaqrən-t ‘horns’	
bāhr ‘sea’	ʔəbħər-t ‘seas’	(also as feminine <i>bāhr-āt</i>)
kalb ‘dog’	ʔakləb-t ‘dogs’	

In (10) (ʔ)*a*- is used as a prothetic vowel (cf. Arabic) but in (11) /ʎa/ (going back to Proto-Semitic *ša-) supplies the ‘fourth’ consonant and certain triconsonantal nouns can form the plural as quadriconsonantals:

- (11) kalb ‘dog’ ʎakāləb-t ‘dogs’
 namr ‘leopard’ ʎanāmər-t ‘leopards’
 bəʃər ‘ox’ ʎabāʃər ‘oxen’ (also sound plural bəʃ(ə)r-āy)

In terms of their agreement in the NP the feature [+human] is of paramount importance.

(i) In Classical Arabic broken plurals denoting male or female human beings may take the adjective in either the broken or sound plural.

(ii) Even sound plurals denoting male human beings may take the adjective in either broken or sound plural.

(iii) Broken or sound plurals denoting [-human] beings take the adjective in the feminine singular.

- (12) raʃul-un saʃid-un rijāl-un suʃad-āʔ-u ~ rijāl-un saʃid-ūna
 ‘a happy man’ ‘happy men’ ‘happy men’
- ʃarūs-un saʃid-at-un ʃarāʃis-u suʃad-āʔ-u ~ ʃarāʃis-u saʃid-āt-un
 ‘a happy bride’ ‘happy brides’ ‘happy brides’
- fallāh-un saʃid-un fallāh-ūna suʃad-āʔ-u ~ fallāh-ūna saʃid-ūna
 ‘a good farmer’ ‘good farmers’ ‘good farmers’
- ʃayš-un kabīr-un ʃuyūš-un kabīr-at-un
 ‘a big army’ ‘big armies’

Collective nouns form both the broken plural and the sound plural (called sometime the plural of ‘paucity,’ typically between 3 to 10 counted objects):

- (13) Collective Broken plural Singulative ‘Paucal’
 samak asmāk samak-at samak-āt
 ‘fish’ ‘fishes’ ‘a fish’ ‘fish’
 (various species) (counted)
- šajar ašjār šajar-at šajar-āt
 ‘trees’ ‘trees’ ‘a tree’ ‘trees’

A historical treatment of the broken plural has been a preoccupation of a number of illustrious Semitists (see Ratcliffe (1998) for their names and achievements).

Given its relics in other branches of Afro-Asiatic languages, it is generally assumed that the internal pluralization was once quite widespread. In their later development other Semitic and Afro-Asiatic languages kept the means of ablaut (apophony) for the formation of their aspectual and diathetic categories and limited/eliminated ablaut for the purposes of pluralization. (A parallel reassignment of ablaut functions from nominal to verbal categories is observable in the IE phylum of languages; e.g. in Greek qualitative and quantitative ablaut *ei ~ oi*, *ēi ~ ōi* in the case suffixes was given up earlier than that in the root *leip ~ le-loip*).

Here are some examples of the broken plural from Semitic (Akkadian, Hebrew), Cushitic, Berber and Chadic:

(14) Akkadian	alak-t 'way, behavior'	alkak-āt
Hebrew	keleb 'dog'	kəlāb-īm
Beḏawye	kām 'camel'	kam
Tashelhiyt	a-gadir 'fortress'	i-gudar
	a-fus 'hand'	i-fass-ən
Hausa	àkwiyà 'goat'	awākī

One of the commonest plural patterns of triconsonantal nouns (CVCC) features the infix *-ā-/-a-* (between the second and the third consonant): Common Semitic *kalb 'dog' forms the plural *kilāb* in Arabic, *kəlāb-īm* in Hebrew, *kalb-īm* in Aramaic and *kalab-āt* in Geez and we could with some confidence reconstruct the Proto-Semitic plural form as *kalab- (cf. Diakonoff 1988: 65). The infixation of *-a-* appears to be very common in Berber (cf. *a-gadir*, Pl *i-gudar*; *a-bagug* 'wolf,' Pl *i-bugag*, etc.). As we saw in (8) and (11) *-ā* can also be used as a suffix in the formation of the sound plural (Arabic *nabiyy* 'prophet,' Pl *anbiy-ā?*; Geez *bəḥər* 'ox,' Pl *bəḥər-āy*).

1.4 Case

The reconstruction of the PAA case system is beset with particular problems. In Egyptian the case suffixes are not represented in writing. The Berber and Cushitic systems do not possess the accusative; in Eastern Cushitic there are relics of the Common Afro-Asiatic genitive suffix *-i*, while in Berber the primary prepositions combine with the noun in the construct state (*a-drar* 'mountain,' *y=u-drar* 'to(ward) the mountain,' cf. section 1.5). In Semitic languages (Akkadian, Arabic) the prepositions are followed by the noun in the genitive (Akkadian *ana šarr-im* 'to a/the king,' Arabic *li=malik-in* 'to a king') while in Ethio-Semitic (Geez) which does not possess the genitive case the prepositions are followed by the noun in the unmarked form (*wəsta gannat* 'in the garden,'

māsla maṣḥaf ‘with the letter’). In Geez, however, all the prepositions end in *-a*, the suffix of the annexed noun in the construct state, i.e. they are treated in the same fashion as the head nouns in the genitival construction (cf. section 1.5).

In Semitic languages Akkadian and Classical Arabic present the system of three ‘abstract’ cases (Nominative, Genitive, Accusative) in three numbers (Singular, Dual and Plural). It may be of some interest to examine the terminology designed by the Arab grammarians for dealing with case (cf. Section 2.1). Case inflection is called *i-ṣrābu l-ismi* (lit. ‘arabization of the noun’). The individual cases are labeled as follows:

- (15) ‘(the noun in) the nominative’ (in *-u*): *marfūṣ* (lit. ‘erected, raised’)
 ‘(the noun in) the genitive’ (in *-i*): *maḵrūr* (lit. ‘pulled, drawn to’)
 ‘(the noun in) the accusative’ (in *-a*): *maṣṣūb* (lit. ‘set up, raised, erected’)

This terminology is based partly on the Stoic concept of the *ptōsis orthē* ‘casus rectus’ (lit. ‘upright’) and *ptōsis plagīā* ‘casus obliquus’ (lit. ‘slanted’). The term *maḵrūr* ‘pulled, drawn to’ refers to the immediate proximity of the genitive to its head noun in the construct state (cf. section 1.5).

For the sake of further discussion in (16) the Akkadian and the Arabic case systems are juxtaposed:

(16)	Akkadian case system			Arabic case system		
	Singular	Dual	Plural	Singular	Dual	Plural
Nom	šarr-um	īn-ān ‘eyes’	šarr-ū	malik-un	malik-āni	mulūk-un
Gen	šarr-im	īn-īn	šarr-ī	malik-in	malik-ayni	mulūk-in
Acc	šarr-am	(=Gen)	(=Gen)	malik-an	(=Gen)	mulūk-an

The dual is diptotic (Gen/Acc) and so is the plural in Akkadian; in Arabic the plural is triptotic only with the nouns forming the broken plural, the external plural is diptotic in both masculine and feminine nouns (*fallāh-ūna* ‘farmers,’ *fallāh-īna* Gen/Acc; *fallāh-āt-un*, *fallāh-āt-in* (Gen/Acc) ‘peasant women’).

In the Ethio-Semitic branch Geez is diptotic contrasting the unmarked form (-Ø) used as the nominative and the ‘annexer’ in the construct state (*gabr=a naḡus* slave=ANNEXER slave ‘the slave of the ruler’) vs. the accusative form in *-a* used also for the ‘annexed’ in the construct state (cf. section 1.5):

- (17) *bālāq fannaw-a* *malāṭək-t=a* (Geez [Num 22.15])
 Balak sent.3SG.M messengers=ACC
 ‘Balak sent messengers’

səm=a kokab
 name=ANNEXED star
 'the name of the star'

In Akkadian the dative case is found with personal pronouns, both independent and clitic, in Old Babylonian; with clitics also in Old Assyrian (based on von Soden 1952: 41–43):

(18)	Nom	Gen/Acc	Dative	Clitics: Acc	Dat
'I'	anāku	jāti	jāši(m)	-ni	-am, -ni(m)
'you' (M)	attā	kāta	kāšim	-ka	-ku(m)
'you' (F)	attī	kāti	kāšim	-ki	-ki(m)
'he'	šū	šuāti	šuāšim	-š(u)	-šu(m)
'she'	šī	šu/iāti	šu/iāšim	-š(i)	-ši(m)
'we'	nīnu	niāti	niāšim	-niāti	-niāši(m)
'ye' (M)	attunu	kunūti	kunūšim	-kunūti	-kunūši(m)
'they' (M)	šunu	šunūti	šunūšim	-šunūti	-šunūši(m)

In Babylonian the dative pronominal clitics are attached to the 'ventive' form of the verbs (of motion and sending) enlarged by the particle *-am* (Sg) / *-nim* (Pl). (This particle corresponds to the Hittite particle *u-(we-)* 'here, hither' vs. *pe* 'there, thither,' cf. German *her* vs. *hin*):

- (19) išpur-a(m) 'he sent' (er sandte her)
 išpur-akku(m) 'he sent to you' (< *-am-kum*)
 išpur-šunūti 'he sent them'
 išpur-akkuššunūti 'he sent them to you' (*-am-kum-šunūti*)

Hebrew and Arabic only possess one set of verbal pronominal clitics used for direct object. Nevertheless, in Arabic if the pronominal object is hosted by the 'accusative' particle *ʔiyyā* the pronominal clitic attached to the verb may realize the indirect pronominal object:

- (20) raʔā-nī vs. bāʔa-nī ʔiyyā-hu
 saw=me sold=me ACC=him/it
 'He saw me' 'He sold it to me'

In Middle/Late Babylonian and New Assyrian the accusative and dative forms are used interchangeably and *-m* (mimation) is left out. The contrast between the Gen/Acc vs. Dat is implemented by *-t-* vs. *-š-*; the latter is present in the nominal suffix *-iš*, documented in Akkadian and Amorite in the adverbial

meaning of 'locative-terminative': *qerb-iš* 'in the middle,' *dār-iš ūm-ī* lit. eternity-LOC/TERM day-GEN/PL 'in eternity'; and in adverbs of 'manner': *mād-iš* 'much,' *damq-iš* 'well.' There are also instances of its grammaticalization (approaching the meaning of 'dative') seen in Old Akkadian anthroponyms (*Iliš-tikal* < *Il-iš tikal* 'trust in god') or in the poetic discourse (*šēp-iš-šu* foot-TERM-his 'to his foot'). In other Semitic languages (Eblaite, Ugaritic, Hebrew, Epigraphic South Arabian) the same locative/terminative suffix is documented as *-aš*, weakened ultimately to *-ah* > *-ā* (as in the Hebrew 'terminative' *ʔarṣ-ā* 'to the earth,' *maʔl-ā* 'upwards'). It is also documented as dative or locative in some Cushitic and Omotic languages (cf. Diakonoff 1988: 61).

The fifth case of Akkadian, documented in Old Akkadian and Old Assyrian, is the locative in *-um*. It appears independently (*ištēn manāʔ-um* 'on one mine') or with a dependent genitive or a pronominal suffix (with or without prepositions *ina* 'in' and *ana* 'to,' cf. von Soden 1952: 87–88):

(21) <i>qerb-um</i>	Bābil-i	<i>ina libb-u māṭ-im</i>
middle.LOC	Babylon.GEN	in heart.LOC country.GEN
'in Babylon'		'inside the country'
<i>šēpuššu</i> (< <i>šēp-um-šu</i>)	later	<i>ana šēp-i-šu</i>
foot.LOC=his		to foot.GEN=his
'to his foot'		'to his foot'

In other later documented Semitic languages there are lexicalized relics of this case: in Arabic *taht-u* 'below' as an adverb (vs. preposition *taht-a* 'under'), *qabl-u* 'previously, before' (vs. preposition *qabl-a* 'before'); in Hebrew *šilšōm* 'day before yesterday,' *piʔʔōm* 'immediately'; Geez *lāʔlū* 'above,' *kantū* 'gratuitously.'

Special indirect ('dative') pronominal suffixes are also found in Berber languages. Tamazight data are presented in (22); direct and indirect object clitics are attached before or after the verb according to the syntactic rules (data from Penchoen 1973: 26–27)

(22) Independent pronouns	Clitics: Direct	Indirect
'I'	nəkk	i
'you' (M)	šəgg	(i)š
'he'	nətta	(i)t
'she'	nəttaṭ	(i)tt
'we'	nukni	ax
'ye' (M)	kwənni	(i)kwən
'they' (M)	nihni	(i)tən

(Note: *kw* is a unitary phoneme).

In the context of the Afro-Asiatic phylum one has to keep in mind that the term ‘nominative’ is not coextensive with its use in the Indo-European counterpart. In the nominative-accusative systems of Akkadian and Classical Arabic (in 16) the nominative case marker *-u* was used to denote the subject. But all the other functions of the IE nominative—such as nomination, counting, addressing (expressed by the vocative in many languages), nominal predicate (expressed by the nominative or instrumental in Slavic languages)—were in Semitic originally realized by the zero marker *-Ø*, called ‘absolute’ case:

- | | | |
|------------------------------|--|------------------|
| (23) <i>batiq-Ø wattur-Ø</i> | | (Old Assyrian) |
| ‘cheap (or) expensive’ | | |
|
 | | |
| <i>ina kār-Ø kār-Ø=ma</i> | | (Old Assyrian) |
| in colony.ABS colony.ABS=PRT | | |
| ‘in each colony’ | | |
|
 | | |
| <i>awīl-um šū šarrāq-Ø</i> | | (Old Babylonian) |
| man.NOM that thief.ABS | | |
| ‘that man is a thief’ | | |

The verbal predicate in the third Sg with the zero marker (with *-at-Ø* in the feminine) is called stative; the other persons are formed by pronominal suffixes attached to the nominal / adjectival / verbal stem CaC(i)C by the linking vowel *-ā*:

- | | | |
|---------------------|------------------|--------------------|
| (24) <i>damiq-Ø</i> | <i>šū</i> | ‘he is good’ |
| <i>damq-at</i> | <i>šī</i> | ‘she is good’ |
| <i>damq-ā-ta</i> | (<i>anta</i>) | ‘you (M) are good’ |
| <i>damq-ā-ku</i> | (<i>anāku</i>) | ‘I am good’ |

(If formed from the transitive verbs its meaning is passive: *āl-u šakin-Ø* ‘the city is/was founded,’ *šakānu* ‘to found,’ cf. section 2.2).

The absolute case is also used in addressing (*Šamaš* ‘Sungod’ vs. *šamš-um* ‘sun’) and counting. The cardinal numbers (3–10) come in two genders and two states, free (= casus ‘rectus’) and absolute: *šalāš-um* (free M) ‘three,’ *šalaš-t-um* (free F), *šalaš* (absolute M), *šalāš-at* (absolute F).

The numerals are used in their absolute form in apposition to the counted object (cf. von Soden 1952: 90–92):

- | | |
|------------------------|-------------|
| (25) <i>šalaš-(a)t</i> | <i>ūm-ī</i> |
| three.F/ABS | day-M/PL |
| ‘three days’ | |

šam-āt-um	šalaš
downpour.F/PL.NOM	three.M/ABS
'three downpours'	

1.5 State

In Semitic, Berber, Egyptian (?) and Cushitic languages the noun appears in a special morpho-syntactic category called state (or in the common latinized terminology 'status'). From the morphological point of view the shape of the noun is determined by the syntactic function played by it. The grammars of individual languages distinguish a number of types of the nominal state. We will start with the best-known type, the 'status constructus' of the Semitic languages. In the Arabic linguistic tradition this category is called *idāfah* 'addition'/'annexation'/'attachment.' It occurs when two nouns are adjacent in a genitival/attributive construction: the first noun (*al-muḍāfu* 'annexed'/'possessed') is followed by the noun in the genitive (*al-muḍāfu ilayhi* 'annexer'/'possessor'). (The Hebrew linguistic tradition is based on the Arabic tradition: *səmiḳūt* lit. 'support', *nismāk* 'supported', *sōmēk* 'supporter'; the latter term is based on the active participle of the verb *sāmak* 'to support' while its Arabic counterpart means actually 'annexed to him/it').

(26)	kitāb-u	muḥallim-in	kitābu	l-muḥallim-i
	book.NOM	teacher.GEN.INDEF	book.NOM	ART.teacher.GEN
	'a book of a teacher'		'the book of the teacher'	

The resulting noun phrase is realized with a primary stress on the genitive ('annexer') and behaves as a unit comparable with IE compounds (cf. *finjān-u qahw-at-in* 'a cup of coffee' > 'a coffee cup', *šahr-u šasal-in* lit. a month of honey > 'a honeymoon'). The construct state of Classical Arabic can be declined; surprisingly, the construct state of the much earlier documented Akkadian cannot. Here the annexed noun appears in the caseless (absolute) form. The same is true of Geez (but its annexed noun appears in the accusative form, cf. section 1.4).

In addition, in Geez all the prepositions are treated as the annexed noun; their invariable *-a* started as an accusative suffix with local nouns (e.g. *qədm* 'front', *qədm-a bēt* front-ACC house 'a front part of the house' > *qədma bēt* 'in front of the house'). The Akkadian and Geez construct states are contrasted with the Arabic construct state in (27):

(27)	Akkadian	Geez	Classical Arabic
Subject	bīt šarr-im	bēt-a nəguś	bayt-u malik-in 'kings house'
Object	bīt šarr-im	bēt-a nəguś	bayt-a malik-in

Nevertheless, in Old Assyrian annexed nouns 'name' and 'hand' appear with the suffix *-i* (*šum-i* / *id-i* N-GEN 'the name/hand of N') and the noun 'king' may appear with the suffix *-a*: *šar-Ø* ~ *šarr-a* (cf. von Soden 1952: 82). Polysyllabic feminine nouns form their annexed form with the suffix *-i* (*napiš-t-i šarr-im* 'the life of the king') or *-Ø* after their feminine marker *-(a)t-Ø* (*napš-at šarrim* 'the life of the king').

In Akkadian the construct state is caseless even if it functions as the genitival construction (annexer) to another noun: *iš* (*bīt šarrim*) 'a tree of the king's house' vs. Arabic *šajar-at-u* (*bayt-i malik-in*). An earlier state of affairs is found in Old Akkadian and Old Assyrian (cf. von Soden 1952: 79 ff.) esp. in prepositional phrases: *in bīt-i N-GEN* 'in the house of N', *iq-qabl-i xarrān-im* lit. in middle-GEN trip-GEN (but also *iq-qabal xarrān-im*) 'during the trip.'

The other states recognized by the grammars of Akkadian are: 'status rectus' (= free state), pronominal state, predicative state, and the absolute state. Diakonoff (1988: 62) subsumes the latter two under 'status indeterminatus.'

The status rectus (not to be confused with the IE casus rectus) is the declinable form of the noun without a nominal or pronominal attribute (the latter two constructions are the construct state and the pronominal state).

The pronominal state is actually a variety of the construct state featuring the pronominal possessive clitics attached to the noun. In its declined form Akkadian preserved the case endings on the 'annexed' much longer than with the nominal 'annexer' (21). For instance, the names of relatives (*ab-um* 'father', *ax-um* 'brother' and *em-um* 'father-in-law') are declined with three cases in the pronominal state (very much as in Classical Arabic): *abū-ka* 'your father' (Subj), *abā-ka* (Obj) and *ina bīt(-i) abī-ka* 'in the house of your father.' Triptotic inflection is also found with the roots 'tertia infirmæ' (*kalû-šu*, *kalî-šu*, *kalâ-šu* 'his all'). In the plural the reason for the maintenance of case distinctions could be the movement of accent from the root to the suffix: *šarr-ū* 'kings', *šar'r-ū-šu* 'his kings', *šarr-ī* (Gen/Acc), *šar'r-ī-šu* (cf. von Soden 1952: 84 ff.).

Akkadian does not possess grammatical means to express the definiteness of either the annexed or the annexer (*bīt šarrim* means 'a/the house of a/the king'). As shown in (20) Classical Arabic does it by the definite article on the annexer (*baytu l-maliki* 'the house of the king'). The other two options are available, but they have to be realized by the prepositional phrase (*li* 'to' + N-GEN): *bayt-un li=l-maliki* 'a house of the king' and *al-baytu li-malik-in* 'the house of a king.'

The construct state in Geez features the suffix *-a* on the annexed (*gabr-a nəgus* 'a/the servant of a/the king'), claimed to have possibly arisen by extension from the accusative (Moscati et al. 1964: 96, 101). In modern Ethio-Semitic the annexed can carry the definite article, e.g. in Tigre (Raz 1983:94): *walat nəgus* 'the kings daughter'; (at the beginning of the sentence) *wa-la-walat nəgus* and-ART-daughter king 'and the king's daughter.'

Biblical Hebrew is caseless and the annexed in its construct state is characterized by certain vocalic changes resulting from the movement of the primary stress to the annexer (*dā'ḅār* 'word' but *dəḅar=ham-'meleḵ* 'the king's word'). Its pronominal state often preserves the original vowels of the stem (free *meleḵ* 'king' but *malk-ī* 'my king,' cf. Arabic *malik-*).

The system of states in Berber languages is of a different nature. Unlike Semitic languages, here the term construct state (or rather annexed state) indicates the noun functioning as the subject following its predicate; in other instances the noun is in the free state. These two states are marked morphologically in the first syllable of the word: *a-ryaz* 'man' absolute state singular vs. *u-ryaz* construct state singular (in Tamazight, Central Morocco). More specifically, with vowel-initial nouns (*a-*, *u-*) in the absolute state the construct state is formed by prefixing *w-* (or *y-* if the noun begins with *i-*):

(28) Free state		Construct state (Pencheon 1973: 20)
'man'	a-ryaz man'	> wa-ryaz > u-ryaz
'river'	asif	w-asif
'tongue'	ils	y-iləs

Masculine plural forms are marked with *i-*, feminine nouns with *ti-* (in the singular feminine nouns drop *-a* in the construct state). Examples in (28) are from Tamazight:

(29)	Free state	Construct state	Plural (Pencheon 1973: 20–21)
'Amazigh'	a-maziḡ	u-maziḡ	i-maziḡ-ən
'Amazigh' (F)	ṭa-maziḡ-ṭ	t-mazix-t	t(i)-maziḡ-in

The alternation *a- ~ u- ~ i-* in the free state (*asif* 'river,' *uššn* 'jackal,' *ils* 'tongue') has nothing to do with the alternation in the case suffixes in Semitic languages (it probably reflects a much earlier system of an article. An interesting phenomenon is the use of the construct state with primary prepositions: *yər ṭə-mḍin-ṭ* to F/CONSTR-city-F 'to the city' (vs. *qḅəl ṭa-mḍin-ṭ* 'before the city').

On the level of syntax the alternation between the free state and the absolute state is governed by syntactic and pragmatic rules exemplified in (30) by means of data from Taqbaylit (Kabyle, Algeria):

(30) yecca	w-rgaz	'The man has eaten'	(Achab 2003: 9)
3M.SG.ate	CS.man		
a-rgaz	yecca	'The MAN has eaten'	
FS.man	3M.SG.ate		

The noun functioning as the object appears in the free state if it is indefinite; if it is definite it will be realized in its construct state and it will be cross-referenced by a pronominal clitic on the predicate (data from Achab 2003: 9):

- (31) yecca Yidir a-ghrum 'Yidir ate bread' (Achab 2003: 9)
 3M.SG.ate Y. FS.bread
- yecca-t Yidir w-ghrum-nni 'Yidir ate the bread'
 3M.SG.ate=it Y. CS.bread=that

If the object is topicalized then it will appear in its free state:

- (32) a-ghrum yecca-t Yidir '(As for) the bread, Yidir ate it'
 FS.bread 3M.SG.ate=it Y.

In the Cushitic languages we encounter a variety of complex and heterogeneous systems of states in conjunction with an elaborate system of definiteness (cf. section 6.) As in Berber the state of a noun is determined by the syntactic and pragmatic rules (definiteness, Focus vs. Topic, anaphoric relationships). For instance, in Somali the noun appears in the absolute state (marked by the suffix *-a*) if it functions as an object (direct or indirect) or a focal subject, a new or unknown entity to the listener (cf. Saeed 1984). On the other hand, the noun appears in the 'nominative' if it functions as a topical definite subject, marked by suffixes *-u* and *-ii* (in the past tense):

- (33) nin=ka baa wíil=kii arkay (Dubnov 2003: 33)
 man=DEF FOCUS boy.ABS=DEF/PAST see
 'the man saw the boy'
- nin-ka baa wíil=kî arkay
 man=DEF FOCUS boy.NOM=DEF/PAST see
 'the boy saw the man'

1.6 Definiteness

In Semitic languages the earliest form of marking for the nominal definiteness is by means of deictic elements *-m / -n*, the so-called mimation or nunation. As shown in (15) in Akkadian the ending *-m* is added in the masculine singular (also in the Fem Sg *šarr-at-um* 'queen' and Fem Pl *šarr-āt-um*); the ending *-n* is added in the dual, while the plural displays neither of them. However, as shown in (21) in Akkadian mimation does not possess the function of distinguishing

definiteness, unlike nunation in Arabic; contrast *bīt šarr-im* 'a/the house of a/the king' with *bayt-u malik-in* 'a/the house of a king.' Nevertheless, in Old Akkadian the absence of mimation in some anthroponyms and in some common names used as theonyms (*abu* 'the father' and *axu* 'the brother') is interpreted as indicative of its earlier function of indefiniteness (cf. von Soden 1952: 80, Moscati et al. 1964: 97, Diakonoff 1988: 66). Later on, as shown in (15), the function of mimation was to distinguish between the masculine singular and the plural forms (-*um* vs. -*ū*) but not the feminine forms (-*at-um* vs. -*āt-um*). During the subsequent history of Akkadian (already by the end of the Old Babylonian and Old Assyrian periods) mimation fell into disuse.

These matters appear to be the other way round in the Northwest Semitic area where Ugaritic displays endings with -*m* in the dual and in the masculine plural (but not in the singular or feminine plural). Gordon's (1965) reconstruction of the Ugaritic system is presented in (34):

(34)		Plural		Dual (Ugaritic)	
		Masc	Fem	Masc	Fem
	Nom	ṭāb-ū-ma	ṭāb-āt-u	ṭāb-ā-mi	ṭāb-(a)t-ā-mi 'good'
	Gen/Acc	ṭāb-ī-ma	ṭāb-āt-i	ṭāb-ē-mi	ṭāb-(a)t-ē-mi

As in Ugaritic, mimation in Hebrew disappeared in the singular (with the loss of case) and feminine plural but was maintained in the masculine plural and dual (both masculine and feminine):

(35)	yām-īm	hōm-ōṭ	yōm-ayim	šəp-āṭ-ayim (Hebrew)
	'days'	'walls'	'two days'	'two lips'

(Occasionally the dual suffix may be attached even to the feminine plural, e.g. *hōm-ōṭ-ayim* 'double walls'). This mimation, however, has nothing to do with definiteness; the definiteness in all the three numbers is marked by the article *ha=* whose original shape **hal/n-* is reflected in the doubling of the initial consonant of the following noun (*hay=yām-īm* 'the days,' *hay=yōm-ayim* 'the two days').

The two salient features of Aramaic (and later Syriac) are the plural suffixes with nunation (Masc -*in*, Fem -*ān*) and the postpositive definite article -*ā* (< *-(h)ā): *malk=ā* king=ART vs. Hebrew *ham=melek* ART=king 'the king'; *malk-āṭ=ā* queen=ART vs. *ham=malk-āh* queen-ART 'the queen.' In the feminine plural the article is attached to the original form in -*āt* (cf. Akkadian and Arabic): *malk-ān* 'queens' but *malk-āṭ-ā* queen-PL=ART 'the queens.' In the masculine the long -*ī* in the suffix is replaced by -*ay* (documented in the oblique dual forms -*ay-ni* in Arabic, *ī-n* < **-ay-n* in Akkadian, and -*ay-im* < **-ay-m* in Hebrew): *malk-īn* 'kings,' *malk-ayy-ā* 'the kings.'

As we saw above, in (20) and (21), Classical Arabic maintained nunation, but to judge by the Epigraphic South Arabian among its earlier functions was also that of the demonstrative pronoun and in its grammaticalized shape the marker of definiteness; e.g. *šlm-n* could mean both 'this statue' or 'the statue'; the earliest Lihyānite inscriptions display *-n* as the marker of definiteness (but the later inscriptions feature also the new proclitic article (?)*l-* (data in Beeston 1962). With the introduction of the new proclitic definite article (< **han/l-*) nunation in Classical Arabic changed from the definite into an indefinite article. Along these lines, it should be observed that nunation/mimation in the Semitic family exploits deictic elements which are also found in pronouns; in Akkadian we find them in demonstrative pronouns: *anniu(m)* 'this' (Babylonian) and *ammiu(m)* 'that' (Assyrian); the element *-l-* is found in (Babylonian) *ullūm* 'that.'

In Ethio-Semitic there are no convincing traces of either nunation or mimation. Its postpositive article =(*h*)*ū* (*bəʔəsī=hū* 'the man,' *dabr=ū* 'the mountain') has been traced back to the possessive suffix *-hū* (cf. Hebrew *-hū*) by Praetorius (1886: 33) and Dillmann (1899/1907: 426); its *-ū* is also found in the independent personal pronoun *wəʔətū* 'he' (compared with Hebrew *hū* and Arabic *huwa*, Geez enlarged its form by *-t* which is also documented in Phoenician *hmt* 'he' and South Arabian demonstratives, e.g. Sabaeen *hwt*).

In New Ethio-Semitic languages the definite article *la-* can be traced back to the dative/accusative preposition *la-* 'to' which in Geez often replaces the accusative-marked definite objects (cf. Weninger 1999: 39). In Tigre, unlike in Arabic, it may be prefixed to the noun in the pronominal state (*la=bəʔəs-a* 'her husband' vs. Arabic *zauǰ-u-hā*) and to the annexed noun in the construct state (*wəlād la=dəgge ~ la=wəlād la=dəgge* 'the boys of the village' vs. Arabic *awlād-u l-qary-at-i*).

Egyptian created its own article from the demonstrative pronouns *pǝ-* (M), *tǝ-* (F), *nǝ-* (Pl), hence the Coptic definite article *p(e)=*, *t(e)=*, *n(e)*: *pe=hto* 'the horse,' *ne=hto* 'the horses,' etc. (cf. Loprieno 1995: 69).

In Berber the traces of an earlier article system are seen in the markers for the state (section 1.5). In Cushitic, Chadic and Omotic languages articles are not common; in the Cushitic family they are found in Beɖawye and some Highland and Lowland East Cushitic languages. For instance, in Somali there is a postpositive definite article =*ka*, =*kī*, =*ku* (Masc), =*ta*, =*tī*, =*tu* (Fem) whose vowel is determined by several syntactic and pragmatic factors (whether the noun is a subject or object, whether the subject is focused on or whether it is topical, and the tense/aspect of the predicate; cf. Dubnov 2003: 21–26).

In typological terms one can observe that the momentum for the rise of the (definite) article is the reduction in the number of morphological cases. On the Indo-European side (cf. Hewson and Bubenik 2006: 21) an eloquent example is found in the Hellenic family which created its system of the definite article in the context of four morphological cases (Nom, Acc, Gen, Dat) during its

Classical period after the demise of the adverbial cases found in Mycenaean Greek (Instr, Abl, Loc) and surviving in Homeric Greek (Loc, relics of the Instr). The same could be said about the Germanic family where the four-case system of the Old Germanic languages was established after the loss of the Instrumental (still found in relics in Old English and Old Saxon). On the Semitic side, Classical Arabic presents the well-established system of the article (definite and indefinite) in the context of three morphological cases (Nom, Acc, Gen) while the earlier state of affairs with five cases is represented by Akkadian (Nom, Acc, Gen, Terminative/Dative in *-iš* and Locative in *-um*); unlike Northwest (Aramaic) and Central Semitic languages (Hebrew, Arabic) Akkadian never developed an article. Along the same lines, in the second part of this chapter (2.3.6) we shall see that unlike the other Semitic languages Akkadian also never created periphrastic aspectual categories (Progressive, Perfect).

1.7 Reconstructing Proto-Afro-Asiatic as an Ergative Language?

Proto-Afro-Asiatic has been reconstructed as an ergative language by Diakonoff (1988: 59–60), Loprieno (1995), Satzinger (2004: 487–498) and several other scholars. It is assumed that Proto-Afro-Asiatic was an active–stative language which marked the difference between action and state. According to Diakonoff the Old Semitic nominative in *-u* started as a Proto-Afro-Asiatic case denoting the subject of action in contrast with the zero case denoting the subject of a state. As we saw in (24), in Akkadian the zero suffix was also used in the predicative state (as a complement in the equational predication) and in the indeterminate state (the noun outside of grammatical links). The suffix *-a* denotes the accusative in Semitic languages but there are various relics of its earlier function as an absolute case in Old Akkadian, Classical Arabic and Ge'ez.

As argued by Sasse (1984) the case system of (East) Cushitic languages can best be described in terms the subject case and absolute case (and the genitive/possessive case). The range of the absolute case includes the citation form of the noun, the predicative form of the noun and a number of additional functions (vocative, measure, adverbial function, focus marking). For instance, in Saho the absolute and subject case are distinguished with masculine nouns ending in vowels (*šár-e* vs. *šár-i* 'house'); in Sidamo final vowels of the absolute (*-a*, *-e*, *-o*) are replaced by *-i* or *-u* in the subject case (*manc-o* vs. *manc-i* 'man,' *ann-a* vs. *ann-u* 'father'); in Somali the definite (i.e. topical) subject is formed by the suffix *-ii* (or its allomorph *-u*).

Projecting these facts back into Proto-Afro-Asiatic Diakonoff (1988: 60) surmises that there was no phonemic opposition between the vowels /i/ and /u/ (cf. the reconstruction of the word 'name' as either **šim* or **šum*) and concludes that at that stage there existed a binary contrast of two cases: the nominative

(originally an ergative case in $-u$) and the absolute case in $-\emptyset/a$. As we saw above the nominative in $-u$ is attested only in Semitic (Somali possesses $-u$ as an allomorph of $-i$). On the other hand, the nominative with the ending $-i$ is well documented in Cushitic (Saho, Oromo, Sidamo, Somali).

Reconstructing the Proto-Asiatic ergative case in $*-u/i$ on the basis of two branches only (Semitic and Cushitic) would seem to be farfetched. The formal identity of the ergative allomorph $-i$ with the Semitic genitive suffix can be advocated to explain the rise of the “possessive” sentence construction in Old Egyptian (*sḏm-f* ‘he hears’ < **sḏam=Vf* ‘his hearing’), cf. 2.5. Strongest support for the ergative hypothesis comes from Old Egyptian which can be portrayed as occupying an “intermediate position” between a nominative-accusative and an ergative-absolutive coding (cf. Loprieno 1995: 65, 83–84). Traces of ergativity can be found above all in the identical morphological treatment of the pronominal objects of transitive verbs (*sḏm=j sw* ‘I hear *him*’) and of the pronominal subjects of intransitive verbs (*nfr sw* ‘*he* is good’).

Nevertheless, the typological trajectory from the Proto-Afro-Asiatic stage of ergative typology via the intermediate stage of the accusative-less system (as in Berber and Cushitic) all the way down to the nominative-accusative system (as in Akkadi and Classical Arabic) is plausible. Needless to say, much more research in this area is desirable (cf. Satzinger 2004).

2. Verbal Categories in Semitic Languages

2.1 Morphological Contrast ‘Perfect’ vs. ‘Imperfect’ in Central Semitic Languages

To judge by the textbooks on historical linguistics most diachronic work on the finite (tense, aspect, mood, voice/diathesis) and the nonfinite verbal categories (participles, infinitives) has been done in the Indo-European phylum of languages. And yet it is the Afro-Asiatic phylum where our primary data, extending all the way back to the third millennium BC (Akkadian, Aramaic, Old Egyptian), should provide us with important means for testing our assumptions and theories of the rise, maintenance, development and demise of the verbal categories.

We will start our discussion with the best-known data of Central Semitic languages (Classical Arabic and Biblical Hebrew). Their systems of “tenses” are based on two morphological categories, called traditionally *Perfect* (formed by suffixes) and *Imperfect* (formed by prefixes): *katab-a* ‘he wrote /has written’ and *ya-ktub-u* ‘he writes/will write.’ This traditional Latin-based terminology is far from being satisfactory for Semitic languages since Latin distinguishes

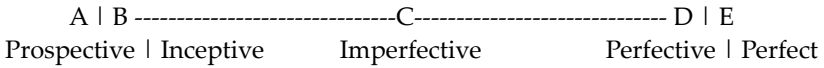
three temporal forms in two aspectual subsystems, called traditionally *Infectum* (Present, Imperfect, Future) vs. *Perfectum* (Perfect, Pluperfect, Future Perfect). In more up-to-date linguistic studies it is customary to refer to the two Semitic forms by twofold labels *Past/Perfect(ive)* vs. *Non-Past/Imperfect(ive)*, indicating that these two morphological forms express both aspect (perfect(ive) vs. imperfective) and tense (past vs. non-past).

One of the fundamental problems in the analysis of the Classical Arabic system is the polysemy ('ambiguity') of the basic form *katab-a*. As our translation ('he wrote' or 'he has written') indicates this form could be labeled both Preterite (Past) and Perfect, hence the aspecto-temporal label Past/Perfect. The same is true of Biblical Hebrew where *kātab* covers the scope of both the past perfective (Aorist) and the perfect in the Greek translation of the Old Testament (Septuagint) and in the original Greek of the New Testament (*é-grap-s-e* 'he wrote' and *gé-graph-e* 'he has written'). A serious terminological confusion is to be seen in the aspectual terms *perfective* (for the Perfect) and *imperfective* (for the traditional Imperfect). On the one hand, the aspectual term *imperfective* is a major improvement over the traditional latinized term Imperfect. It is a highly suitable label for *ya-ktub-u* in its use for both the incomplete (habitual) events in the present 'he writes' or the "imaginary" events in the future time zone, 'he will write,' which are by their own nature incomplete i.e. imperfective). On the other hand, to extend the traditional label Perfect to *perfective* (the aspectual counterpart of imperfective) is most undesirable in spite of its widespread use in Semitic linguistics (Perfective vs. Imperfective replacing traditional Perfect vs. Imperfect). The label Past/Perfect(ive) with brackets around *-ive* (i.e. Past/Perfect or Past/Perfective) captures this state of affairs. The morphological dichotomy (suffixal vs. prefixal conjugation) of Central Semitic languages is not based on the category of perfectivity as familiar from some Indo-European languages (Hellenic, Slavic). The fact that the Arabic form *katab-a* 'he wrote' is used to translate the Greek aorist (= *past perfective*) *é-grap-s-e* 'he wrote' or the Russian past perfective *on na-pis-a-l* 'he wrote' cannot be used to argue for the presence of the category of perfectivity in Classical Arabic. Notice that these IE languages form the imperfective counterpart to the past perfective in a systematic fashion (in Greek by removing *-s-*, *é-graph-e* 'he wrote/was writing' and in Slavic by removing the prefix, *on pis-a-l* 'he wrote/ he was writing'), i.e. their aspectual systems are based on the category of perfectivity. We will see, however, that the category of perfectivity existed in the verbal system of Akkadian, the most archaic Semitic language (section 2) and that it is found in contemporary Berber dialects (section 5).

The systemic values of these three aspectual categories—*imperfective*, *perfective* and *perfect*—can best be appreciated in the context of other aspectual categories such as *prospective* (future) and *inceptive*. In my analysis from the point

of view of 'Event Time' (Hewson and Bubenik 1997: 13–14) the subject may be represented as appearing in five different positions, labeled A,B,C,D,E in the simple Figure 10.1:

Figure 10.1 Systemic values of major aspectual categories within 'Event Time' (after Hewson and Bubenik, 1997: 13–14):



A represents the subject in a position before the event (prospective aspect); B represents the subject at the very beginning of the event (inceptive aspect); C represents the subject with the event 'in progress' (imperfective/progressive aspect); D represents the subject in the position of completing the event (perfective aspect or aorist); and E represents the subject in a position after the event (retrospective aspect or perfect). The difference ('distance') between D and E is not large and this fact explains the easy transformation of the perfect into the narrative tense (preterite) in many languages (Latin, Egyptian, Arabic, etc.)

Given the importance of the native Arabic linguistic terminology (not so well known in western scholarship) I wish to make a few observations on it before proceeding further. The form *katab-a* is called *al-fiʿl al-māḍī* 'the verb in the past tense' (*māḍīn* is present participle of the verb 'go away, elapse, expire'); *ya-ktub-u* is called *al-muḍāriʿ al-marfūʿ* understood as 'imperfect tense.' To explain this term it is necessary to consider its modal counterpart, *ya-ktub-a* 'that he write,' called *al-muḍāriʿ al-manṣūb* 'imperfect subjunctive mood.' The common denominator of both is the present participle of the verb 'to be similar to, to resemble'; the term *marfūʿ* lit. 'lifted, raised' (= passive participle of the verb *rafaʿ*) is understood as '(the noun) in the nominative; (the verb) in the indicative'; the term *manṣūb* lit. 'erected, raised' (= passive participle of the verb *naṣab*) is understood as '(the noun) in the accusative; (the verb) in the subjunctive.' In other words, the Arabic linguistic terminology is based on the morphological similarity of the indicative *ya-ktub-u* and nominative *al-kitāb-u* 'the book' vs. the subjunctive *ya-ktub-a* and the accusative *al-kitāb-a*.

Given this close link with morphology, this terminology cannot be applied elsewhere, especially in the absence of verbal and nominal suffixes. Thus in Hebrew linguistic terminology the same morphological opposition, *kāṭab* 'he wrote/has written' vs. *yī-ktōb* 'he writes/will write,' is captured by tense-based terms, *zəman šāḅār* 'past tense' vs. *zəman šāṭīd* 'future tense.' The term for the 'present tense,' *zəman hōwē*, is applied to the present participle *kōṭēb* 'writing'; here we have to acknowledge the fact that Hebrew (like Russian) does not possess a copula (hence *hū kōṭēb* 'he [is] writing' but (*hū*) *hāyāh kōṭēb* 'he was writing').

I will return to the tense /aspect systems of Central Semitic languages in section 2.3.

2.2 The Tense/Aspect System of Akkadian

Akkadian, the earliest documented Semitic language (with Old Akkadian texts from the twenty-fourth century BC) differs fundamentally from the Central Semitic languages in its verbal system. Unlike the simple morphological dichotomy of (suffixal) *katab-a* vs. (prefixal) *ya-ktub-u* of Central Semitic, Akkadian displays four aspectual forms, one suffixal (called *Stative*) and three prefixal forms, called traditionally *Present*, *Preterite* and *Perfect*. In a more up-to-date linguistic terminology the prefixal conjugations represent the aspectual categories of *Imperfective*, *Perfective* and *Perfect*.

- (1) **Stative** damq-āku 'I am good' (based on the adjective *damq-u* 'good')
Imperfective a-parras 'I separate'
Perfective a-prus 'I separated'
Perfect a-p-t-aras 'I have separated'

The verb *parāsu* (Infinitive) 'to separate' is representative of the apophonic pattern (*a/u*) typical of transitive verbs: *i-parras* 'he separates' vs. *i-prus* 'he separated' (*a-a*, the vocalic pattern of the imperfective contrasts with \emptyset -*u*, the vocalic pattern of the perfective). The forms of the Imperfective and Perfective (in the 3rd Masc Sg) of the other three classes of verbs are displayed in (2):

(2) Four classes of verbs in Akkadian

	Imperfective	Perfective	Pattern
Class 1 'separate'	i-parras	i-prus	a/u
Class 2 'break'	i-maxxaṣ	i-mxaṣ	a/a
Class 3 'be attentive'	i-paqqid	i-pqid	i/i
Class 4 'run'	i-rappud	i-rpud	u/u

The vocalism (*i/i*) and (*u/u*), patterns 3 and 4, is typical of intransitive verbs. The 2nd class with the non-apophonic pattern *a/a* contains both transitive (*i-lmad* 'he learnt') and intransitive verbs (*i-plax* 'he was afraid'). A closer look at non-apophonic intransitive verbs in classes 3 and 4 reveals that they can be described semantically as consisting of certain Aktionsart categories:

- Class 3: (i) deadjectival stative verbs: *i-dammiq* 'he is good,' *i-dmiq* 'he became good'
(ii) verbs of motion: *i-qarrib* 'he gets closer,' *i-qrib* 'he got closer'
- Class 4: (i) verbs of motion: *i-rappud* 'he runs,' *i-rpud* 'he ran'
(ii) experiential verbs *i-raxxuṣ* 'he trusts,' *i-rxuṣ* 'he trusted'
(iii) verbs of speaking *i-raggum* 'he yells,' *i-rgum* 'he yelled'

The formation of the perfect with the *t*-infix yields three patterns. The first two classes (i.e. mostly transitive verbs) keep the *a-a* pattern of the imperfective, and the intransitive verbs in Class 3 and 4 keep the patterns of the imperfective, *a-i* and *a-u*, respectively:

(3) Formation of the perfect in Akkadian

	Imperfective	Perfect
Class 1	i-parras 'he separates'	i-p-t-aras 'he has separated'
Class 2	i-maxxaṣ 'he breaks'	i-m-t-axaṣ 'he has broken'
Class 3	i-paqqid 'he guards'	i-p-t-aqid 'he has guarded'
Class 4	i-rappud 'he runs'	i-r-t-apud 'he has run'

(However, the 'hollow' roots, i.e. those with *y* or *w* as the second C, keep the *ī* or *ū* of the perfective: 'give' *i-qāiš/qāš* (imperfective), *i-qīš* (perfective), *i-q-t-īš* (perfect); 'be firm, righteous' *i-kān* (imperfective), *i-kūn* (perfective), *i-k-t-ūn* (perfect).

The meaning of the Akkadian perfect corresponds to the Indo-European perfect whose main property is to express past complete(d) events which are relevant for the present situation (this dual property of the perfect can be captured by the term *retrospective* to avoid a potential confusion between *perfect* and *perfective*). Salient examples are found in Babylonian letters in sentences introduced by adverbs *inanna* 'now' and *anumma* 'now, herewith' (called 'epistolary' or 'announcement' perfect by Huehnergard (2004: 253):

- (4) inanna ward-am ana maxr-i=ka aṭṭardam (< a-ṭ-t-ard=am)
 now servant.ACC to front.GEN=your 1SG.PERFECT.send=PRT
 'I have now sent the servant to you'

The data in (5) demonstrate the formation of the diathetic category of the mediopassive in all the four aspectual categories of the transitive (Class 1) and the intransitive verb (Class 3):

(5) Aspectual categories in the active and mediopassive voice in Akkadian

Active	Imperfective	Perfective	Perfect	Stative
'separate'	i-parras	i-prus	<i>i-p-t-aras</i>	paris
'guard'	i-paqqid	i-pqid	<i>i-p-t-aqid</i>	paqid
Mediopassive				
'separate for oneself'	i-p-t-arras	<i>i-p-t-aras</i>	i-p-tat-ras	pi-t-rus
'guard for oneself'	i-p-t-aqqid	<i>i-p-t-aqid</i>	i-p-tat-qid	pi-t-qud

We saw in (3) that the active perfect is formed by the *t*-infix. Examples in (5) show that all the aspectual categories in the mediopassive voice exploit the same

t-infix. Within the middle voice the sole difference between the imperfective and perfective is the reduplication of the second radical: *i-ptarras* 'he was separating for himself' vs. *i-ptaras* 'he separated for himself' (*iptaqqid* 'he was guarding for himself' vs. *iptaqid* 'he guarded for himself'). The contrast between the perfective and the perfect within the active voice is based on ablaut (*iprus* 'he separated' vs. *iptaras* 'he has separated'); within the middle voice the formation of the perfect involves the doubling of the *t*-infix: the 'first' *-t-* marks the mediopassive (derivational category) and the 'second' *-t-* marks the perfect (inflectional category): *iptaras* 'he separated for himself' (perfective) vs. *iptatras* 'he has separated for himself' (perfect). This double duty of the infix *-t-* results in the polysemy of the forms *iptaras* and *iptaqid* (as indicated by italics), i.e. *iptaras* is ambiguous between the active perfect 'he has separated' and the mediopassive perfective 'he separated for himself.' We may wish to observe that these two categories are morphologically quite wide apart in Indo-European languages (e.g. in Ancient Greek the active perfect *gê-graph-e* 'he has written' vs. the middle voice perfective (Aorist) *e-gráp-s-ato* 'he wrote for himself'); on the Semitic side, it should be observed that the polysemy of Akkadian *i-p-t-aras* preserves an earlier state of affairs reflecting the 'affinity' of the mediopassive (derivational category) and the perfect (inflectional category). In the case of experiential verbs (Class 4) it should also be observed that mediopassive forms quite often possess different lexical meaning from their active counterparts. Some examples are presented in (6):

(6)	Active perfect	Mediopassive perfective
i-m-t-axas	'he has hit'	'he fought'
i-d-t-agal (> iddagal)	'he has seen'	'he perceived'
*i-7-t-amar (> êtamar)	'he has seen'	'he perceived'

In addition to the mediopassive there was also the passive formed by the prefix *n-* which assimilates to the following stop. All the above aspectual categories in the passive are displayed in (7)

(7)	Aspectual categories in the passive in Akkadian				
	Passive	Imperfective	Perfective	Perfect	Stative
	'separate'	i-n-parras	i-n-paris	i-n-t-apras	na-prus
	'guard'	i-n-paqqid	i-n-paqid	i-n-t-apqid	na-pqud

It is of fundamental importance to observe that the vocalism of the passive perfective is identical with that of the (active) stative *paris* 'who has separated, separator, divider,' see (1) and (5). The vocalism of the stative, in its turn, is identical with that of the verbal adjective (*damq-u* < * *damiq-*). But they are

finitized differently; the stative by pronominal enclitics, whereas the passive perfective by pronominal proclitics:

(8) Passive perfective	Active stative
3 rd Sg M i-n-paris 'he has been separated'	paris 'he is separated'
2 nd Sg M ta-n-paris	pars-ā-ta
1 st Sg a-n-paris	pars-ā-ku

2.3 The Tense/Aspect Systems of Central Semitic Languages

The striking difference between the tense/aspect system of Akkadian and those of Central Semitic languages (Aramaic, Hebrew, Classical Arabic) is the absence of modal forms in the Perfect (*katab-a*) in the latter group; on the other hand, the morphology of the 'modal' forms of Akkadian, i.e. those formed by the suffixes *-u* and *-a(m)* does not correspond to that found in Classical Arabic (indicative *ya-ktub-u*, subjunctive *ya-ktub-a* and jussive *ya-ktub-Ø*). Unlike Arabic, the Akkadian subjunctive in *-u* is used in relative clauses (e.g. Old Babylonian *šu i-qīš-u* 'who gave' vs. *i-qīš-a(m)* 'he gave'; in Assyrian the subjunctive can be enlarged by the particle *-ni*: *ša i-qīš-ū-ni* 'who gave'); the subjunctive is also used in certain subordinate temporal clauses (e.g. *ūm tuppa-ka āmur-u* 'when I have seen your tablet'). The suffix *-a* (originally the dative suffix *-am/-nim*) is added to the verbs of 'motion' and 'giving' (it corresponds to the Hittite particle *u-(we-)* in the sense of 'towards the speaker,' very much as in German the particle *her* vs. *hin*), e.g. *illik-a(m)* 'he came here' vs. (perfective) *illik* 'he went' (cf. German (*herbei*)*kommen* vs. (*hin*)*gehen*). This form, called appropriately 'ventive' in the grammars of Akkadian, is available in all the four aspectual categories (displayed in 5). And lastly, the indicative forms of Akkadian carry no suffix. In Arabic the suffixless form of the imperfective, called appropriately *al-majzūm* 'apocopé,' is used in the modal meaning as a 'jussive' (or 'precativ' in the grammars of Akkadian).

To 'visualize' this absence of modal forms in the Central Semitic verbal systems it may be useful to compare the tense/aspect/mood system of Akkadian (in 9) with that of Classical Arabic (in 10):

(9) Tense/Aspect/Mood system of Akkadian				
	Imperfective	Perfective	Perfect	Stative
Indicative	i-parras	i-prus	i-p-t-aras	baḷiṭ 'he is alive'
Subjunctive	i-parras-u	i-prus-u	i-p-t-ars-u	baḷ-u 'who is alive'
Ventive	i-parras-a(m)	i-prus-a(m)	i-p-t-ars-am	

(10) Tense/Aspect/Mood system of Classical Arabic

	Imperfective	Perfect(ive)
Indicative	ya-ktub-u 'he writes'	katab-a 'he wrote/has written'
Subjunctive	ya-ktub-a 'that he write'	
Jussive	ya-ktub 'may he write'	
Energicus	ya-ktub-an(na) 'he surely will write'	

We will say more about the source of the Akkadian perfect (*i-p-t-aras* 'he has separated') in section 4. At this point we want to restate the viability of the opposition of perfectivity (imperfective - perfective) vs. that of perfect (= retrospective) in Akkadian. Observe that it permeates the whole system of 'modal' forms (with the exception of the contradictory 'ventive stative'). We wish to enforce this line of reasoning by presenting a classical example of a three way aspectual system (imperfective - perfective - retrospective), namely Ancient Greek in (11); traditional tense labels are given in brackets); the modal forms in the perfect could be realized analytically in Hellenistic Greek by combining the perfect participle with the modal forms of the verb 'to be.'

(11) Aspect/Mood system of Ancient Greek

	Imperfective	Perfective	Perfect
Indicative	gráph-ei	é-grap-s-e	gé-graph-e
Subjunctive	gráph-ēi	gráp-s-ēi	ge-gráph-ēi (later ge-graphōs êi)
Optative	gráph-oi	gráp-s-eie	ge-gráph-oi (later ge-graphōs eíē)

A similar picture would obtain for the three-way aspectual contrast in quasi-nominal forms (participles and infinitives) in Ancient Greek. Akkadian (in 12), however, does not allow for the morphological contrast between perfective and perfect participle and the infinitive in the active, and in the passive the imperfective participle and infinitive are not formed. In the Central Semitic languages, Classical Arabic allows only for the simple binary contrast of the present/active vs. past/passive participle in (*kātib* 'writing' vs. *ma-ktūb* 'written').

(12) Binary aspectual contrast in the system of quasi-nominals in Akkadian

	Imperfective	Perfect
Active		
Participles	pāris-u(m)	mu-p-t-ars-u(m)
Infinitives	parās-u(m)	pi-t-rus-u(m)
Passive		
Participle		mu-n-pars-u(m)
Infinitive		na-prus-u(m)

The cardinal event in the history of the Central Semitic languages is the rise of the binary morphological system which is linked with the rise of the ‘Neo-Perfect,’ the suffixal conjugation of the form *kataba*. It can be traced all the way back to the verbal adjective of Proto-Semitic, reflected by the verbal category of stative in Akkadian and archaic Berber dialects (Taqbaylit). Its earliest attestation could be in the Eblaite texts (third millennium BC) where Pagan (1998: 14) analyzes the theonym *ra-ga-ma-il /ragam-a ʔil/* as ‘Il has spoken/roared’ as an ‘unambiguous *paras*-perfect.’ It is conceivable that the historical development would proceed along the fairly well-established lines of grammaticalization: *noun/adjective* > *verbal adjective* > *stative* > *perfect* > *preterite*. The stative (in Akkadian) is conjugated by means of pronominal enclitics very much as in Central Semitic and South (Geez) Semitic languages:

(13)	Akkadian (stative)	Geez (perfect(ive))	Arabic (perfect(ive))
	3SgM <i>paris</i>	<i>katab</i>	<i>katab-a</i>
	2SgM <i>pars-ā-ta</i>	<i>katab-ka</i>	<i>katab-ta</i>
	1Sg <i>pars-ā-ku</i>	<i>katab-ku</i>	<i>katab-tu</i>

In Central Semitic (Aramaic, Hebrew, Arabic) *-t-* in the suffix of the 1st Sg arose by analogy with the 2nd Sg. The original state of affairs is seen in Akkadian (Akkadian *an-ā-ku* ‘I,’ *an-ta* ‘you’); also Geez shows the original suffix of the 1st Sg *-ku* (its *-k-* spread to the 2nd Sg).

The tense/aspect system of Aramaic (as vocalized in the Aramaic portions of the Old Testament) is presented in (14). Its mediopassive is formed by the dental prefix attached to the form *kəṭīḇ* (with the accent on the ultima and the first vowel reduced to schwa). This form goes back to the form which we encountered in the Akkadian stative *paris* and the verbal adjective **damiq-* ‘(be) good.’ It appears in both aspectual categories, the imperfective and perfect(ive), finitized by pronominal proclitics and enclitics, respectively. Aramaic did not inherit the passive formed by the prefix *-n* (cf. Akkadian, Hebrew, Arabic). Its innovative passive can be formed only in the perfect(ive) by finitizing the passive participle *kəṭīḇ* by pronominal enclitics. Observe the crucial difference between the two bases, one with the short ultima in the mediopassive finite forms, and the other with the long ultima in the passive participle (and the finite passive forms based on it). These two forms go back to two different ancestral forms in Proto-Semitic, **CaCiC* and **CaCīC*, respectively (see Bubenik 2001a).

(14)	Tense/Aspect system of Aramaic	
	Imperfective	Perfect(ive)
Active	<i>yí-ktuḇ</i>	<i>kəṭāḇ</i>
Mediopassive	<i>yi-t-kəṭīḇ</i>	<i>hi-t-kəṭīḇ</i>
Passive		<i>kəṭīḇ</i>

In Late (Jewish Babylonian) Aramaic this crucial distinction between these two bases was lost (mediopassive imperfective *li-t-kəṭīḫ*, perfective *ḥi-t-kəṭīḫ*, passive *kəṭīḫ*). In addition, there was another mediopassive category marked by the reduplicated dental prefix *tt-*: *li-tt-akšar* 'it becomes suitable,' *ḥi-tt-akšar* 'it became/has become suitable.' I propose to analyze this form as resulting from the assimilation of the nasal prefix *n-* (marking the passive in Akkadian, Hebrew and Arabic) to the dental prefix *t-* (marking the mediopassive). Thus in its formation this form corresponds to the Akkadian passive perfect:

- (15) *i-n-t-akšar > i-tt-akšar Late Aramaic mediopassive perfect(ive)
 *i-n-t-apras > i-tt-apras Akkadian passive perfect (cf. 7)

This form could be evaluated as a piece of evidence for the missing nasal passive in Aramaic; contrast Hebrew *ni-kṭab*, Arabic *i-n-kataba* 'it was/has been written.'

The tense/aspect system and the diathetic categories of (Biblical) Hebrew are presented in (16) and those of Classical Arabic in (17):

- (16) Tense/aspect system of (Biblical) Hebrew
- | | Imperfective | Perfect(ive) |
|--------------|------------------------------------|---------------------|
| Active | yi- <u>kṭab</u> | kā <u>ṭab</u> |
| Mediopassive | yi- <u>t-kattēḫ</u> | hi- <u>t-kattēḫ</u> |
| Passive | yi-k- <u>kāṭēḫ</u> (< *yi-n-katib) | ni- <u>kṭab</u> |
- (17) Tense/aspect system of Classical Arabic
- | | Imperfective | Perfect(ive) |
|-------------------|---------------------|---------------------|
| Active | ya-ktub-u | katab-a |
| Mediopassive | ya-k-tatib-u | i-k-tatab-a |
| <i>n</i> -passive | ya-n-katib-u | i-n-katab-a |
| ablaut-passive | yu-ktab-u | kutib-a |

Before attempting to reconstruct the Proto-Semitic verbal system in (21) two observations are in order. It appears that both mediopassive and the passive categories arose by finitization of the Proto-Semitic verbal adjective *CaCiC (cf. Akkadian **ya-n-paris* > *ipparis* in (7), Hebrew **yi-n-katib-* > *yi-k-kāṭēḫ* in (16) and Arabic forms in (17)). As far as the absence of the modal forms in the perfect in Central Semitic languages is concerned, it should be observed that certain verbs ('to bless,' 'to help,' 'to be alive,' 'to be dead') allow for the use of the perfect(ive) form in the modal meaning of the 'optative'/'precativ.' For instance in Classical Arabic *bārak-a* means 'he blessed' but in the modal context it means 'may he bless' (as in *bāraka ʾllāhu fika* 'may God bless you'); similarly, *ṣāš-a* means 'he lived' but in the modal context it means 'may he live,' alternating with the

jussive *li-ya-siš* ‘may he live’; in the 2nd Pers *siš-ta* ‘you lived’ or ‘may you live,’ alternating with the jussive *li-ta-siš* ‘may you live.’ Typologically parallel alternation is available in Akkadian: *bal-tā-ta* (stative) ‘you are alive’ or ‘may you live,’ alternating with the jussive *li-ta-blut* ‘may you live.’ The difference, however, is the morphological identity of the jussive with the perfective category in Akkadian, whereas in Arabic the jussive is formed by the subtraction of the suffix *-u* from the imperfective. In the following section I will comment on this phenomenon in diachronic terms.

2.4 Reconstructing the Proto-Semitic Tense/Aspect System

The three aspectual categories of Akkadian (imperfective, perfective and perfect) can be projected back to Proto-Semitic (as suggested by Bubenik 2003). The crucial supporting evidence comes from South Semitic (Classical Ethiopian, Jibali) and from the larger context of Afro-Asiatic languages (Berber and Old Egyptian). It is well known that Classical Ethiopian (Geez) possesses the imperfective category *yə-kattəb* ‘he writes,’ corresponding to the Akkadian imperfective *i-parras* ‘he separates.’ It is important to realize that its morphological counterpart in Arabic, formed by the reduplication of the second radical, *yu-kattib-u* ‘make someone write’, is a derivational category (factitive or causative). Let us establish this point more convincingly by contrasting the Geez system of basic and factitive forms with that of Arabic in (18):

(18) Geez	Imperfective		Perfect(ive)
	Indicative	<i>yə-kattəb</i>	katab-a
	Jussive	<i>yə-ktəb</i>	
	Factitive	Indicative	<i>yə-kəttəb</i>
		Jussive	<i>yə-kattəb</i>
Arabic	Indicative	ya-ktub-u	katab-a
	Jussive	ya-ktub	
	Factitive	Indicative	yu-kattib-u
		Jussive	yu-kattib

It should be observed the basic jussive is identical in Geez and Arabic, and that in Geez the basic imperfective form is actually homophonous with the factitive jussive (italics). The factitive indicative in Geez is innovative. But now the crucial piece of evidence for our reconstruction of the PS state of affairs is the fact that the imperfective category in the basic mediopassive does not reduplicate the second radical:

(19) Geez	Imperfective	Perfect(ive)
	Mediopassive <i>yə-t-katab</i>	<i>ta-kat(a)b-a</i>
Factitive	Mediopassive <i>yə-t-kəttab</i>	<i>ta-kattab-a</i>

In the basic mediopassive the imperfective and the jussive form are identical, *yə-t-katab*, and there is no reduplication of the second radical (as in Arabic *ya-k-t-atib-u*; in Hebrew the mediopassive reduplicates its second radical, *yi-t-kattēl* < **yi-t-kattib*, but there is no reduplication in the passive **yi-n-katib*). In Jibali the imperfective category in the basic reflexive is realized by the infix which cannot be reduplicated (cf. active imperfective *y-šərq* ‘he steals’ and reflexive imperfective *yə-š-té-rəq*).

While it is possible to reconstruct the three-way aspectual contrast for Proto-Semitic in the active, in the mediopassive—given its morphology—it is impossible to reconstruct the formal difference between the perfective and the perfect. These two categories would be homophonous unless we want to project the Akkadian system back to PS and reconstruct the mediopassive perfect with a double dental prefix:

(20) PS mediopassive perfect ~ perfective	* <i>yá-t-paqid</i> (stative verbs)
	* <i>yá-t-paras</i> (active verbs)
PS mediopassive perfect (?)	* <i>ya-tat-paras</i> (based on Akkadian <i>i-p-tat-ras</i>)

While there is some Afro-Asiatic evidence for the reconstructability of the dental prefix (Twareg, Beḍawye) at this point we will reconstruct the PS system as displaying homophonous forms for the mediopassive perfective and the active perfect (as in Akkadian):

(21) Proto-Semitic Tense/Aspect/Voice system				
Active	Imperfective	Perfective	Perfect	Stative
Stative verbs	* <i>ya-páqid</i>	* <i>yá-pqid</i>	<i>yá-t-paqid</i>	* <i>páqid</i>
Active verbs	* <i>ya-páras</i>	* <i>yá-prus</i>	<i>yá-t-paras</i>	* <i>páris</i>
Mediopassive	Imperfective	Perfect(ive)		
Stative verbs	* <i>ya-t-páqid</i>	* <i>yá-t-paqid</i>		
Active verbs	* <i>ya-t-páras</i>	* <i>yá-t-paras</i>		
Passive	* <i>ya-n-páras</i>	* <i>yá-n-paris</i>		

Given the above, the contrast between the imperfective vs. perfect(ive) in both the mediopassive and the passive can be reconstructed as being implemented

solely by the accent (penultimate vs. antepenultimate). This could not be a stable condition and the earliest documented (North) East Semitic languages (Akkadian and Eblaite) enhanced this contrast by introducing the reduplication of the second radical in the imperfective: **ya-t-páras* > *ya-t-párras* > *yi-t-párras* > *i-p-t-árras*. (One could also add the factor of iconicity in the partial reduplication of the imperfective category). As is well known, in all Semitic languages the reduplication of the second radical is exploited by the derivational category of 'factitive' (iterative and causative) and Akkadian had to introduce ablaut in their prefixes to obviate their homophony; contrast *i-parras* with factitive *u-parras*.

Unlike the basic stative (**paqid*, **paris*) which is identical with the verbal adjective (*damiq* '(be) good'), its mediopassive form *pi-t-rus* (in 5) is an innovation of Akkadian. On the other hand, its (medio)passive counterpart *na-prus* (in 7), as in *na-lbub* 'who has become wild,' could have a parallel in the Arabic passive participle *ma-ktūb* 'written.'

Several participial forms are reconstructible for PS:

- (i) active **pāris* (Arabic *kātib*, Hebrew *kōtēb*)
- (ii) mediopassive **mu-t-paris* (> Akkadian *mu-p-t-ars-*, Aramaic *mi-t-kātēb* < **mi-t-katīb*)
- (iii) (medio)passive **mu-n-paris* (> Akkadian *mu-n-pars-*)
- (iv) vocalic patterns of passive participles of Aramaic (*kātēb* < **katīb*) and Hebrew (*kātūb* < **katūb*) are found also in primary adjectives and nouns (cf. Arabic *kabīr* 'great,' *farīq* 'band,' *jasīr* 'strong').

2.5 The Akkadian Perfect in the Afro-Asiatic Context

The polysemous Akkadian perfect, *i-p-t-aras* 'he has separated' ~ 'he separated for himself' (i.e. ambiguous between the active perfect and mediopassive perfective) has morphological parallels in Central Semitic languages. The mediopassive categories in Aramaic and Hebrew, (16 and 18), are formed by the dental prefix *t-* deriving reciprocal, reflexive and 'experiential' forms (*hākam* 'he was wise' *hi-t-hakkēm* 'he displayed wisdom, sophistry'). An even closer parallel is the Classical Arabic derivational pattern VIII based on the infixation of *-t-*. In semantic terms it is one of the most polyvalent patterns deriving reciprocal, reflexive, passive and 'experiential' forms, e.g. *ġamaʿ-a* 'collect' > *i-ġ-t-amaʿ-a* 'come together,' *haraq-a* 'burn' > *i-h-t-araq-a* 'be burned,' *samiʿ-a* 'hear' > *i-s-t-amaʿa* 'listen,' etc.).

Outside Semitic, in Beḡawye (North Cushitic) the prefix *t-* appears in both the imperfective and the perfect(ive) category of intransitive verbs (in Reinisch's 1893–94 terminology 'present' and 'pluperfect'):

(22) Beḍawye aspectual categories

	Aorist	Imperfective	Perfect(ive)
ʔaam 'get up, rise'	a-ʔaam	ee-t-ʔiim	ii-t-ʔam
baʔar 'wake up'	a-baʔaar	a-t-beʔiir	i-t-beʔir
genaaf 'bend down, genuflect'	a-a-gnaaf	a-d-ganiif	e-d-genif

In Berber there are numerous conjugations in which the imperfective category (but NOT the perfect(ive)) is characterized by the dental prefix. The following examples are from Tayərt, a dialect of Twareg (Prasse et al. 1998):

(23) Twareg aspectual categories

	Aorist	Imperfective	Perfect(ive)
agrək 'belch' (Imperative)	y-agrək	yə-t-agrək	y-ogrək
ämmät 'die'	y-ämmät	yə-t-amättat	y-əmmut

As far as the dental prefix in the Berber imperfective is concerned, Voigt (1987, 2002) has suggested that it has a parallel in the Akkadian 'iterative-habitative' infix *-tan-*. In Akkadian there are minimal pairs of the imperfective iterative vs. basic imperfective:

(24) a-š-tan-appar-akkum	vs.	a-šappar-akkum
1SG.ITER.write=to you		1SG.write=to you
'I keep writing to you'		'I (will) write to you'

The iterative 'permeates' the whole system of Akkadian. It is available in all the derived categories (factive, causative), and all the aspectual and quasinominal categories. The crucial data for the following discussion are presented in (25):

(25)	Imperfective	Perfective	Perfect
Active	i-parras	i-prus	<i>i-p-t-aras</i>
Mediopassive	i-p-t-arras	<i>i-p-t-aras</i>	i-p-tat-ras
Iterative	i-p-tan-arras	i-p-tan-ras	i-p-ta-tan-ras
		(> i-p-t-arras)	(> i-p-tat-arras)

As discussed above (5), the italicized forms, *i-p-t-aras*, show the ambiguity between the active perfect (here the infix *-t-* is an aspectual marker) and the mediopassive perfective (with the derivational infix providing the mediopassive stem for all the other aspectual categories). In the iterative the nasal element *-n-* assimilates to the second radical resulting in the homophony of the mediopassive imperfective, **i-p-t-arras**, and the iterative perfective, *i-p-tan-ras* > **i-p-t-arras** (this form is difficult to translate adequately into English; in Slavic systems it would be expressed by the imperfective/iterative verb with

a perfectivizing prefix, e.g. in Czech *děli-l* (imperfective) > *od-děli-l* (perfective) > *od-děl-ova-l* (iterative perfective), approximately ‘he was separating’ – ‘he separated’ – ‘he used to separate’. Entering the realm of speculations, it could well be that these two forms were distinguished by their accent: *iptárras* (mediopassive imperfective) vs. *íptarras* (active iterative perfective). Do we want to reconstruct the iterative category marked with the infix *-tan-* (or prefix *tan-*) for Proto-Semitic? How far back do we want to project the aspectual system of the earliest documented Semitic language?

(26) Proto-Semitic	Imperfective	Perfect(ive)
Mediopassive	*ya-t-páras	*yá-t-paras
??? Iterative	*ya-p-tan-áras	*ya-p-tán-aras or *yá-p-tan-aras

Returning to the doubling of the infix *-t-* in the mediopassive perfective and the active perfect, the form *i-p-tat-ras* in (22) has a formal parallel in the passive imperfective in Twareg (Prasse, 1973: 86–89):

(27) Twareg		Akkadian
Passive		Mediopassive
Aorist	t-akraz ‘be gained’	Perfective i-p-t-aras < PS *ya-t-paras
Imperfective	tât-akrâz	Perfect i-p-tat-ras < PS *ya-tat-paras ??
Passive (Tw)		
Aorist	tiw-ikraz	
Imperfective	títw-ikrîz	

Do we want to reconstruct the Proto-Semitic mediopassive perfect *ya-tat-paras? It is not at all immediately clear what the Twareg passive imperfective and the Akkadian mediopassive perfect have in common. According to Voigt (1987: 94) their common ground lies in the intransitivity which leads to ‘reflexivity’/‘passivity’ and ultimately to ‘perfectivity’ (via perfect?) in Akkadian, but to ‘durativity’ in Berber; the durativity results ultimately from the basic meaning of the ‘middle’ (‘die Funktion der Durativität/Intensivität ergibt sich aus der Grundbestimmung des Mediums’).

In Old Egyptian, as vocalized by Loprieno (1995: 77–81), the pattern {a-a} vs. {a-i} implements the contrast between the imperfective category (the ‘general present,’ called also misleadingly ‘aorist’) and the perfect: e.g. *sḏm z3=j* */sadam’ziRaj/ ‘my son’ listens’ vs. *sḏm.n=f* */sa’dimn=af/ ‘he has heard’ > ‘he heard’ (the meaning of the present perfect is the original one but during the centuries it developed the meaning of the ‘past perfective’). In addition to these two aspectual categories (imperfective and perfect) there were two perfective forms (‘real preterites’ in Loprieno’s terminology); the so-called indicative *sḏm=f* and the stative. In Classical Egyptian this form was functionally replaced by the

perfect (> preterite) *saḏm.n=f* 'he has heard' > 'he heard,' but *saḏm-f* survived in bound constructions, such as the negative form *nj saḏm=f* 'he didn't hear.' Compared with Akkadian, one of the main differences is the presence of analytic imperfective categories: the progressive and the prospective. The former combines the copula with the preposition *hr* 'on' (or *m* 'in' with verbs of motion) and the infinitive of the main verb, **/saḏām/* 'to hear,' the latter with the preposition *r* 'toward':

The core of the aspectual system of Old Egyptian corresponds to that of Proto-Semitic (in 21), based on three aspectual categories:

(28) Aspectual system of Old Egyptian

Imperfective		Perfective	Perfect
<i>*saḏam=Vf</i>			
Prospective	Progressive		
<i>jw=f r saḏām</i>	<i>jw=f hr saḏām</i>	<i>*saḏm=if</i>	<i>*saḏim.n-af</i>
'he will hear'	'he hears'	'he heard'	'he has heard' > 'he heard'

The main difference, of course, is the famous dilemma of Afro-Asiatic linguistics whether the Proto-Afro-Asiatic was more Old Egyptian-like in forming its aspectual categories by personal suffixes (< originally possessive suffixes) or Akkadian-like in exploiting the prefixes (originally free personal pronouns). The former solution leads ultimately to evaluating the earlier stages of Old Egyptian (and ultimately the PAA system) as ergative (**saḏam=Vf* 'his hearing' grammaticalized as 'he hears'). Another remarkable difference is the presence of analytic forms for the expression of the progressive and prospective aspect. Before addressing the auxiliations processes in Central Semitic languages, let us establish the fact that Akkadian never resorted to analytic formations; its *verbum existentiae*, *bašū* 'be, exist,' is never found in combination with its numerous participles.

2.6 Auxiliation in Central Semitic languages (Aramaic, Hebrew, Arabic)

Unlike Akkadian, the Central Semitic core systems were amplified during the later stages of their development by analytic formations based on the copula ('he was' *həwā* in Aramaic, *hāyā* in Hebrew) plus the participle. Classical Arabic developed double marked constructions combining the copula (*kān-a* 'he was') with the finite forms of the main verb.

In New Hebrew (the New stage is reached by the second century BC in Mishna) the progressive aspect is formed in the usual manner by conjugating the copula: *hū kōtēḅ* 'he [is] writing,' (*hū*) *hāyā kōtēḅ* 'he was writing' and (*hū*) *yi-hyē kōtēḅ* 'he will be writing.'

Similar constructions are available from Middle (Biblical) Aramaic. Further innovations during the later stages of Aramaic, western (Galilean) and Eastern (Babylonian), are available to us from the Palestinian Talmud (midrashim and Targum) and the Babylonian Talmud, respectively. They amount to the creation of a new tense-dominated system. All the three participles—active *kātēb* ‘writing,’ mediopassive *mim-mālīk* ‘pondering’ (< **mit-malik*) and passive *qāṭil* ‘killed’—could host pronominal clitics and these formations were recategorized as a present tense: *kātēb* ṭanā (lit. writing I) > *kātēb* =nā > *kātēb*+nā ‘I write.’ Consequently, the old imperfective *ṭæ-ktōb* ‘I write/am writing’ could be recategorized as the future tense ‘I will write’ and the remodeled perfect(ive) *kaṭab*+t ‘I wrote’ (Middle Aramaic *kitb+ēt*) functioned as the past tense.

Classical Arabic went farthest in remodeling the old aspect-dominated system by creating the progressive aspect and the analytic perfect system, the former by combining the copula with the imperfective and the latter by combining the copula with the perfect(ive) of the main verb:

(29) Analytic formations of Classical Arabic in three tenses

	Present	Past	Future
Progressive	(<i>huwa</i> <i>rāyih</i> ‘he is going’)	<i>kān</i> -a <i>ya-ktubu</i> ‘he was writing’	(<i>sa</i>) <i>ya-kūn</i> -u <i>ya-ktub</i> -u ‘he will be writing’
Perfect	(<i>ya-kūn</i> -u) <i>qad katab</i> -a ‘he has written’	<i>kān</i> -a <i>qad katab</i> -a ‘he had written’	<i>sa ya-kūn</i> -u <i>qad katab</i> -a ‘he will have written’

The status of the present participle within the Arabic aspectual system is very different from that of Aramaic and Hebrew. As shown in (29), unlike Aramaic and Hebrew, Arabic does not use the present participle for the formation of the progressive aspect in the past and in the future. In Arabic the present participle can only be used with motion verbs, *huwa rāyih* ‘he [is] going’ (cf. Hebrew *hū hōlēk* ‘he [is] going’); with other verbs its meaning is associated with the perfect. While Hebrew *hū kōtēb* means ‘he [is] writing,’ Arabic *huwa kātīb* means ‘he has written’ ~ ‘he is the writer.’ In Modern Arabic the present participle of non-motion verbs is used commonly to denote a state resulting from a prior action very much as the English present perfect is used in this fashion (resultative perfect): *anā ṣāmil hādā š-šay?* ‘I have done this before.’

2.7 Conclusions

(i) To explicate properly the evolution of tense/aspect systems in Semitic languages (or in any other language family) it is necessary to consider not only the

exponents of aspect and tense, but also those of diathesis and mood. Put differently, one has to consider the whole verbal system, with the emphasis on SYSTEM (for the ‘whole-language perspective’ in morphological developments see Chapter 8, section 5 in this volume). This, of course, is the time-honored Saussurean stance—the meaning of a form is derived from its position within the system. As we saw above, the same verbal form, such as *-C-t-aCaC* possesses very different grammatical meanings in the Akkadian verbal system (perfect) and the Arabic verbal system (mediopassive). The same participial form, *CāCiC* (> Hebrew *CōCēC*), functions differently in the Arabic and the Hebrew verbal systems.

(ii) The thorny issue of the perfect vs. perfective in Central Semitic languages (Arabic *katab-a* ‘he has written’ ~ ‘he wrote’) can be explicated satisfactorily in diachronic terms. We argued above that for the system to possess the viable contrast of perfectivity (imperfective vs. perfective) vs. perfect it is essential that there should be a three-way morphological contrast as fairly well known from Ancient Greek. As we saw in (11), in Greek this three-way contrast permeates the whole system of non-modal, modal and quasinominal forms (in both diatheses). The aspectual system of Akkadian is typologically identical but, unlike Greek and Central Semitic languages, it remained aspect dominated in not creating the temporal categories within the three aspectual themes (based on the temporal contrast of -past vs. +past):

(30) Akkadian aspectual system:	Imperfective	Perfective	Perfect
Ancient Greek aspectual system:	Imperfective	Perfective	Perfect
temporal system:	Present	(Future)	Perfect
	Imperfect	Aorist	Pluperfect

Central Semitic languages introduced temporal categories in their subsystems of the progressive aspect and Arabic in its innovative subsystem of perfect (29).

(iii) The transformation of the three-way aspectual system of Proto-Semitic into a two-way aspectual system of Central Semitic languages is a result of several grammaticalization processes. As shown in (12), the PS stative, *CaCiC, ended up as Central Semitic Neo-Perfect. The PS perfective, *ya-CCuC was recategorized as the imperfective, Arabic *ya-ktub-u* (see Bubenik 2003). An important relic of an earlier state of affairs is the existence in Arabic of the suffixless form *ya-ktub* (it is used modally but also as the perfect(ive) after the negative particle: *lam yaktub* ‘he has not written’ ~ ‘he didn’t write’). In Biblical Hebrew this earlier state of affairs is observable in the use of the imperfective form after the *wāw*-consecutivum:

- (31) *hālā hizqiyāhū . . . way=yā-bō? ʔēlāw yəšaʕyāhū* [2 Kings 20.1]
 fall-ill.PERF=3SG Hezekiah and=3SG.come.IMPERF to-him Isaiah
 ‘Hezekiah fell ill and Isaiah came to him’

Notice the reduplication of the initial consonant of the prefix; in its imperfective (or modal) use there would be no reduplication (*wə=yābō?* ‘and he will come’ ~ ‘and may he come’).

With a risk of oversimplification we portray the net result of these events as a shift in ‘markedness’ from Proto-Semitic to Central Semitic:

- (32) The rise of the Central Semitic aspectual system from Proto-Semitic
- | Imperfective | Perfective | Perfect | Stative | Adjective |
|--------------|---------------|--------------|---------|----------------|
| *ya-CaCaC | *ya-CCuC | *ya-C-t-aCaC | *CaCiC | *CaCuC |
| / | | / | / | |
| ya-ktub-u | (lam ya-ktub) | katab-a | kabur-a | ‘he was great’ |

Given the source of the Central Semitic ‘Neo-Perfect’ in PS stative we can suggest that the source of the Central Semitic ‘Neo-Stative’ (Arabic *kabur-a* ‘he was great’) lies in the PS adjectival pattern *CaCuC (cf. Assyrian *lamnu-u* ‘evil,’ Fem *lamut-tu* < **lamun-tu*, Akkadian *xamš-u* ‘fifth,’ Fem *xamuš-tu*).

(iv) Considering the nonexistence of modal forms in the system of the perfect in Central Semitic languages (cf. Arabic in (9)) it would seem to me that the frequently quoted aspectual contrast of *kataba* - *yaktubu* (with the contentious label ‘perfect’ or ‘perfective’ for *kataba*) is primarily of modal nature, i.e. [-modal] vs. [+modal].

(v) Given the theoretical priority (?) of modality it could be that the earliest layer in PS (and ultimately PAA) is represented by the contrast *ya-CCuC [+modal] vs. *ya-CCuC-V [-modal].

An interesting typological parallel could be seen in the simplest PIE modal form, injunctive [+modal] vs. [-modal], called ‘aorist.’ Compare Vedic Sanskrit *dā-t* ‘may he give’ (injunctive) vs. *á-dā-t* ‘he gave’ (aorist) traceable back to PIE *deH-t vs. *é-deH-t.

Note

1. My sincere thanks are due to John Hewson, Silvia Luraghi, Abdallah El Mountassir and Osama Omari for their helpful comments on this chapter.

Part IV

SYNTACTIC CHANGE

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11

Word Order

Jan Terje Faarlund

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1. Introduction

The word order patterns in a given language can be seen in two different perspectives. On the one hand there are the syntactic rules of the language, dictating what the order of words and phrases may or must be. Those rules are part of the internalized grammar of native speakers, in generative grammar called *I-language*. This grammatical competence enables native speakers to judge whether a sentence is part of their language, even out of context. Thus a speaker of English does not need a context to determine that (1a) but not (1b) is a sentence of English, generated by the grammar of English.

- (1) a. When will you be home tonight?
b. *When you will tonight home be?

The grammar thus sets the limits for what word order patterns (and other syntactic constructions) are permitted in the language. But within those limits there may be options and possibilities for variation. Thus both (2a) and (2b) are possible English sentences.

- (2) a. I just met George
b. George I just met

The sentences in (2) represent a case of word order variation in English, and speakers have to make a choice between those two during the actual process of speaking (or writing). The choice is not determined by the grammar of English, but by the context, or the discourse situation. (2b) is not likely to be used in a context such as (3).

- (3) - Who did you just meet?
- #George I just met

When discussing word order, we thus need to distinguish between ‘formal syntax’ and ‘discourse function.’

Obviously, the two levels are not independent of each other. The syntactic rules or patterns that become part of the grammar of new speakers of the language are acquired by the infant on the basis of the linguistic input in the environment. Therefore changes in the formal syntax of a language are often caused by changes in the frequency or use of certain patterns in the speech community. In order to understand the causes of word order change we need to look at the language data which new generations of learners are exposed to.

In this chapter we look at two different ways that word order can change from one generation to the next. Note that they both have to do with things that ‘go wrong’ when new speakers infer their internalized grammar from the actual utterances in the environment. On the one hand the infant may miss certain cues and therefore acquire a grammar with fewer elements in a part of the grammar than what was the case in the previous generation. The change is then caused by *reduction*. On the other hand the learner may just assign an underlying structure to a given string which is different from that of the grammar of the previous generation. This kind of change we may call *reanalysis*.

2. Change by Reduction: ‘Free’ to Fixed Word Order

Many of the languages of contemporary Western Europe have a rather fixed word order, with specific positions for finite and nonfinite verbs, and for the argument phrases. Thus English and French are rather strictly SVO; the other Romance languages are also basically SVO, but with some more flexibility than French; the North Germanic languages are XvSVO; German and Dutch are XvSOV, where v stands for finite verb and V for nonfinite verb, and X for any major phrasal category (including S, O, or V). All these languages have developed from earlier stages with much freer word order, such as Latin, Old Norse,

older West Germanic languages, etc. The questions are then what the change from ‘free’ to fixed word order actually involved, how different the two patterns are, and what caused the change to take place. Before turning to these questions it is worth observing that all known changes involving ‘freedom’ of word order are unidirectional. No language has to my knowledge been reported to have changed from having fixed to having free word order. Although Proto-Indo-European may be reconstructed as being an OV language, that does not necessarily imply that it had fixed word order. Thus the ‘free’ word order in Ancient Greek and Latin does not constitute a counterexample to this unidirectionality. Any attempt at explaining a change in word order pattern should therefore also take this unidirectionality into account.

I have hitherto written ‘free’ within quotes, thereby indicating that word order is not really completely free. It seems that in most so-called ‘free word order languages,’ there are certain rules of linear order, and not any sequence of words is grammatical. Also, even if word order may be relatively free from syntactic rules and constraints, it may be all the more constrained by discourse functions.

In order to understand better both ‘free’ word order and the difference between ‘free’ and ‘fixed,’ we will contrast two historical stages of North Germanic, Old Norse (the western dialect of Medieval North Germanic) and Modern Norwegian (one of its contemporary descendents). There are several word order patterns found in Old Norse texts which would be ungrammatical in Norwegian. A sample of those are given in (4–8) below. This is by no means an exhaustive list of word order discrepancies between Old Norse and Norwegian. For one thing, I have not included the word order in the nominal domain. The (a)-sentences below are attested Old Norse sentences (Faarlund 2004), the (b)-sentences are ungrammatical Norwegian equivalents with the same word order and the (c)-sentences are grammatical Norwegian counterparts:

- (4) a. þá tók til orða *Guðræðr Dala-konungr*
 then took to words Gudrøed Dalesmen-king
 ‘Then Gudrøed, King of the Dalesmen, spoke up’ (Heimskringla)
- b. *då tok til orde *Gudrød Dala-konge*
 c. då tok *Gudrød Dala-konge* til orde
- (5) a. *mað-r* kom til hans *göfuglig-r*
 man-NOM.M.SG came to him noble-looking.NOM.M.SG
 ‘A noble-looking man came to him’ (Heimskringla)
- b. **ein mann* kom til han *gjæv*
 c. *ein gjæv mann* kom til han

order would require something to be inserted during acquisition. Although this cannot be ruled out on principle, and does indeed occur under certain circumstances, it is much less plausible (Faarlund 2008).

3. Reanalysis: Head—Complement Order

We now turn to the examples (7–8) above. The Old Norse versions are repeated here as (9) and (10). They illustrate an order of verb and complement, a pattern which is also now lost from Norwegian.

(9) hefir þú *nökkura menn hitt* í borg=inni?
have you some men found in castle=the

(10) er þér skylduð *gert hafa*
which you should done have

In (9) the complement is a direct object (*nökkura menn*), and in (10) the main verb *gert* is the head of a VP which is the complement of the auxiliary *hafa*. This word order pattern is usually referred to as OV, whereas the opposite order found in Norwegian and other Western European languages, is VO.

The OV order is found in Ancient Nordic (Faarlund 2004), other old Germanic languages, and Latin, and it has been reconstructed for Proto-Indo-European (Lehmann 1974; Chapter 4, this volume). By Old Norse, however, VO seemed to be the most common and unmarked order. At this, and earlier stages of Nordic, there must thus have been conflicting input data for new learners. Each infant learning the language would have to decide on the basis of these data whether she was acquiring an OV language or a VO language. The decision presumably would have to be made on the basis of frequency and of general principles of Universal Grammar.

Many OV languages seem to ‘leak’ in the sense that some complements may follow the verb. The occasional occurrence of a VO order in an OV language is therefore not enough to trigger a VO grammar in the next generation. Deviations from the basic order in many languages are conditioned by discourse functions, complexity, or ‘heaviness.’ It is also more common for the object than for the (transitive) verb to carry new information. Typical and frequent verbs in transitive sentences tend to express abstract relations, such as ‘have,’ ‘get,’ ‘receive,’ ‘own,’ operations such as ‘buy,’ ‘sell,’ ‘borrow,’ ‘lend,’ non-descript events such as ‘find,’ ‘observe’ or very general, trivial activities such as ‘eat,’ ‘drink,’ ‘read,’ etc. With such verbs, the new information is usually carried by the direct object rather than by the verb, and if there is a strong tendency for new information to come towards the end of the sentence as in many

languages, the frequency of VO structures may increase over time. In the beginning, the object may be extraposed to the right as an expressive device used to emphasize its focus status. As with other expressive linguistic forms, such as lexical items, the conditions on its use will be relaxed over time. (Consider how the word ‘terribly’ has had its meaning and expressive power reduced in expressions like ‘terribly nice.’) As the conditions on the use of the VO order are relaxed, the frequency increases to the point where new learners of the language interpret VO as the basic form. From then on, the old OV structure is doomed, since there is no motivation for moving the object (except possibly light pronouns) up in front of the verb on functional grounds (for more details, see Faarlund 1985 and 2000).

The grammar of an OV language may then have a rule such as (11a), allowing extraposition of the complement of the verb. Given a certain frequency of application of this rule, its result may have been reanalyzed as a structure generated by (11b).

- (11) a. ${}_v[t_i V] DP_i$
b. ${}_v[V DP]$

This scenario does not assume reduction at acquisition, as in the case of ‘free’ to fixed word order. Nevertheless, this also seems to be an almost unidirectional kind of change. With the possible exception of cases of strong contact situations, there are very few if any documented cases of a change in the opposite direction. This unidirectionality is easily explained by this scenario: In a VO language there is no comparable motivation to move the object to a position in front of the verb.

4. Verb Second: Extension and Reduction

The so-called verb second phenomenon (V2) is a typical feature of Germanic languages. Simply put, in V2 languages the finite verb occupies second position in main clauses. This is found in one form or another in all contemporary Germanic languages (although to a very limited extent in Modern English, where it only affects auxiliaries in interrogative sentences and a few other marginal construction types). In addition, verb second was also a feature of Old French, from where it is now lost, of Breton, and of certain dialects of Rhaeto-Romansch.

The phenomenon can be illustrated by means of the following sentences from German:

- (12) a. Den *kenne* ich nicht
him know I not
‘Him I don’t know’

- b. Nächstes Jahr *tun* wir es anders
 next year do we it different
 'Next year we do it differently'
- c. Was *hat* sie gesagt?
 what has she said
 'What did she say?'

Similar patterns are found in Dutch, Frisian, Afrikaans, Yiddish, in all the Scandinavian languages, as well as in Old English. There are, however, considerable differences in the details among the different languages and dialects of this area (cf. e.g. Westergaard and Vangsnes 2005 for an overview of Norwegian dialects). Those do not need to concern us here, however. The contrast to Modern English can be seen from the translations of (12). The oldest records of Germanic, the Ancient Nordic runic inscriptions, are not V2, however, and neither is Gothic. A couple of examples may serve to illustrate the verb final structure at that stage of Germanic:

- (13) a. godagastiz runo *faihido*
 Godagasti rune painted
 'Godagasti painted the rune' (Einang, 350–400 AD)
- b. hagiradaz i *tawide*
 Hagirada in made
 'Hagirada inscribed (it)' (Garbølle, 400 AD)

Since V2 did not exist in the oldest Germanic records, and since it has been almost completely lost from at least one of the modern varieties, we should be able to observe both its rise and fall in historical times and on the basis of attested data.

The introduction of V2 in Germanic took place in a period which has left us very little material on which to base hypotheses about its origin. The most promising attempt to explain the rise of V2 is in the context of Wackernagel's Law (Hock 1986c:330, and Chapter 7 in this volume). Wackernagel's Law says that clitics attach to the first autonomous word in the sentence. This is well documented for several Indo-European languages. As a result of such a process, certain light elements would regularly appear in second position in the sentence. One such category may have been auxiliary verbs, which then could cliticize in this way. In many languages they have undergone phonological reduction, which typically occurs in unstressed positions, such as Latin *habet* becoming *ha* in Italian and Spanish. In North Germanic the third person singular present of the copula and auxiliary 'be' lost its final consonant *t*. In the earliest runic inscriptions from the middle of the fourth century AD, we find the

form *ist* in final position, (14a). This was later shortened to *is/es* or even just *s* in second position, (14b).

- (14) a. flagda-faikinaz ist
attack-deceived is
'... is subject to deceitful attack' (Vetteland, *ca.* 350)
- b. ni s sol-u sot
not is sun-DAT sought
'It is not touched by the sun' (Eggja, *ca.* 700)

As another effect of the unstressed position the *-s* was later rhotacized, and the present tense form of the verb now appears as *er* in Scandinavian. The movement of the auxiliary to second position was then reanalyzed from being just a phonological rule of cliticization to being a syntactic movement rule. As a final step, the rule was extended or generalized from only affecting auxiliaries, to affecting all finite verbs. This can be described as the loss of a condition on the movement rule. Synchronically, the Germanic V2 languages now have a rule of V to C movement in main clauses. One problem with Wackernagel's law as an explanation of verb second in Germanic, is that he formulated his law on the basis of the oldest Indo-European material, whereas verb second is hardly found outside of Germanic, and it seems to have been an innovation in Germanic (Anderson 2005: 177ff.). There may still be a connection, however, and if the mechanism of placing clitics in second position is somehow a general tendency, it may very well have been in effect at a certain period of early Germanic, yielding the particular Germanic feature of verb second.

The loss of V2 in English is a familiar and well-documented story (Kemenade 1997; for a comprehensive treatment, see Fischer et al. 2000). It took place during Middle English times, through a period of considerable variation and outside influence. (Kroch and Taylor 1997). In Old English and Early Middle English, the verb would be in second position in main clauses. If the sentence starts with a nonsubject, the subject follows the finite verb, as in other Germanic languages. (15a) is from Old English and (15b) from Middle English.

- (15) a. On twam þingum hæfde God þæs mannes sawle gegodod
in two things had God the man's soul endowed
'With two things God had endowed man's soul'
(Homilies of Ælfric)
- b. On þis gær wolde þe king Stephne tæcen Rodbert
in this year wanted the king Stephen seize Robert
'During this year king Stephen wanted to seize Robert'
(Peterborough Chronicle)

This pattern became less and less frequent in the late fourteenth and early fifteenth century, and it is now lost from the grammar of Modern English, which means that the general rule of V to C movement is lost. This means that at some point the trigger for the rule ceased to be robust enough for the rule to be acquired by new generations. Again, cliticization seems to have been involved as a factor: even in Old English, subject pronouns would precede the verb, and they did not seem to ‘count’ as proper positions. They were in other words proclitics on the finite verb. This situation continued into Middle English, consider (16), from the same text as (15b).

- (16) Ðas þing we habbað be him gewritene
 these things we have about him written
 ‘These things we have written about him’ (Peterborough Chronicle)

In addition, subject initial sentences were not triggers for V2, either. And eventually the frequency of V2 sentences in English passed below the threshold of what was needed as a trigger for this rule in the acquisition by new speakers, and the general rule was lost. What remains is a rule of auxiliary raising triggered by a preceding interrogative word.

Most Germanic languages, older ones as well as the modern varieties, have different word order patterns in main and subordinate clauses. Thus Modern German has the finite verb in final position in subordinate clauses, compare (12a), repeated here as (17a), and (17b).

- (17) a. Den *kenne* ich nicht
 him know I not
 ‘Him I don’t know’
 b. wenn du ihn nich *kennst*
 if you him not know
 ‘if you don’t know him’

Verb final order in subordinate clauses was also a predominant pattern in Old English.

- (18) siððan he papan-had *underfeng*
 since he papal-office received
 ‘after he received the papal office’ (Homilies of Ælfric)

Old Norse, as well as Modern Icelandic (and Yiddish), seem to be verb-second also in subordinate clauses. The V2 pattern emerges in clauses with a sentence adverbial or a negation, which then follow the finite verb.

- (19) ef hann *var* eigi þinn bróðir
if he was not your brother
'if he was not your brother' (Heimskringla)

This can be described as a movement of the finite verb to a functional projection, *I* (or *INFL*) above the VP, the adverbial and the NEG-projection. The present-day Mainland Scandinavian languages no longer have verb-second order as a regular pattern in subordinate clauses. Now the finite verb regularly follows a sentence adverbial or a negation in subordinate clauses:

- (20) a. dersom han ikkje *var* bror din
if he not was brother your
'if he was not your brother'
b. *dersom han *var* ikkje bror din
if he was not brother your

This change can be seen as a loss of a rule moving the finite verb from the V-node to the I-node. Note that the trigger for such a movement may easily get below the necessary threshold, since only sentences with other material before the verb in addition to just the subject, will serve as triggers.

5. Grammaticalization of Discourse: Topicalization

Word order change may sometimes not as much be a change in the actual linear order of elements as a change in the grammatical status of the order or the movement operations. One case in point is topicalization in Scandinavian. As already mentioned, declarative sentences were verb-second in Old Norse as in the other Germanic languages (21a). But sentences could also be verb-first (21b–c):

- (21) a. nú *gerir* maðr lang-skip í heraði
now makes man long-ship in district
'Now a man makes a long ship in the district' (Magnus' Law)
b. gekk þú þó ekki haltr?
walked you though not lame
'Did you still not limp?' (Gunnlaug's Saga)
c. fluttu þeir lík Ásbjarnar norðr á Þrándarnes
moved they body Asbjorn's north on Thrandarnes
'They moved Asbjorn's body north to Thrandarnes' (Heimskringla)

As we see from these examples, verb initial sentences in Old Norse could be either interrogative or declarative. In declarative sentences topicalization (moving a phrase to the preverbal position) was a stylistic or discourse functional option. Modern Norwegian is still a verb-second language, and we still find those two patterns:

- (22) a. No byggjer dei eit nytt hus her
 now build they a new house here
 'Now they are building a new house here'
- b. Byggjer dei eit nytt hus her?
 build they a new house here
 'Are they building a new house here?'

Nowadays, however, an empty topic position is possible only in interrogative main clauses. The lack of topicalization is therefore a grammatical mark of an interrogative sentence. In other sentences, topicalization is obligatory. What used to be a stylistic or functional option is now a syntactic rule.

12 The Rise (and Possible Downfall) of Configurationality

Silvia Luraghi

Chapter Overview

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1. Introduction¹

The ancient Indo-European languages display a wide array of features usually connected with non-configurationality, such as free word order, discontinuous constituents and frequent use of zero anaphora. While these features have been observed to frequently co-occur in various languages, and while they appear to be associated with a less strict hierarchical structure than that of English, there is no agreement on the nature of non-configurationality (or even on its relevance). However, since it is clear that some languages exhibit such features, while others do not, it is also reasonable to expect that there should be a reason for such a difference.

In this chapter I describe various phenomena connected with increasing configurationality in the Indo-European languages, and attempt a unified explanation for a number of changes that can be connected to each other in this

framework. While non-configurationality has been discussed virtually only within formal theoretical frameworks, such as Principles and Parameters or LFG, I will offer a usage-based interpretation of the relevant developments, in order to show how and for what reasons languages can change with respect to the features involved.

Research on non-configurationality in the ancient IE languages has mostly focused on discontinuous constituents, while little attention has been paid to null anaphora. I believe, following current research (Baker 2001: 1437), that free occurrence of null anaphora lies at the heart of non-configurationality, and that its appearance draws a line between free constituent order, of the type known from German or Spanish, and ‘real’ non-configurationality. Consequently, after discussing various features of the ancient IE languages which point toward (at least partial) non-configurationality, I will focus on null direct objects in Latin and the development in Romance.

2. Approaches to Non-Configurationality

Non-configurationality became a widely discussed issue within the GB framework especially after Ken Hale called attention to a number of features of Warlpiri, which seem to point toward the absence of hierarchical relations among constituents, notably the nonexistence of the VP. Non-configurational languages have been assumed to have a ‘flat’ structure, or, as argued by Hale in various publications (e.g. Hale 1983), to have a hierarchical structure at the Lexical Structure only, which does not project on Phrase Structure.

Jelinek (1984) proposed the Pronominal Argument Hypothesis, and argued that all NPs in non-configurational languages are appositional either to pronominal affixes hosted by the verb and functioning as real pronouns, when they exist (as in Warlpiri), or to null pronouns. Thus, hierarchical structure within the VP exists, but it only concerns such overt or null pronominals, and not full NPs, which, being appositional, are ungoverned. This gives the impression of a flat structure.²

Baker (2001) further points out that non-configurational languages appear to fall into two groups, the Mohawk, or head-marking type, and the Jiwari, or dependent-marking type (Warlpiri is an in-between case). In Mohawk, an incorporating language, all arguments are indicated by obligatory pronominal affixes on the verb, NPs are not case marked and are not discontinuous, so null anaphora can be considered such only inasmuch as pronominal affixes are considered agreement morphemes, rather than pronouns. Grammatical relations are thus marked on the verb (i.e. the head), rather than on governed NPs (i.e. the dependents); the order of constituents is free. In Jiwari, on the other hand, NPs

are case marked and the verb lacks agreement morphemes: thus, grammatical relations are marked on the NPs (i.e. on the dependents). Both the order of constituents and the order of words within constituents are free (i.e., constituents can be discontinuous), and null anaphora is extensively used for subjects and objects.

3. Indo-European Non-Configurationality

The issue of non-configurationality in the ancient IE languages has never received a unified treatment. Devine and Stephens (2000: 143–148), in their study of discontinuous constituents in Ancient Greek, briefly survey some features of non-configurationality, and also attempt an explanation for the co-occurrence of such features. They suggest that the state of affairs displayed by Ancient Greek is indicative of ongoing change from non-configurationality to increasing configurationality, but leave the diachronic development on the background; their discussion of various types of discontinuity could be more insightful if it were accompanied by some statistics regarding the actual frequency of the different patterns described. Hewson, Bubenik (2006) is diachronically oriented it but virtually only deal with increasing grammaticalization of adpositional phrases, even though the authors point out that the creation of adpositional phrases was followed by various other changes that brought about full configurationality. Non-configurationality in Vedic Sanskrit is discussed in Schäufele (1990), whose major concern is to gauge which formal framework can better account for hierarchical structure in Vedic. All these works either do not deal at all with or only mention null anaphoras, a topic which has received attention in the framework of non-configurationality virtually only in research on Old Icelandic, see e.g. Sigurðsson (1993), and Rögnvaldsson (1995). However, even in the case of Old Icelandic, the relevance of null anaphora as an indicator of non-configurationality is often underestimated.³

In the following sections I discuss some features of non-configurationality, notably the existence of discontinuous constituents and the occurrence of null anaphora for arguments other than the subject, in various languages. The ancient IE languages are dependent marking (i.e. the Jivarli type); except for the subject, the verb does not bear agreement markers for other arguments. Since exhaustive descriptions are available for all languages, I refrain from discussing free word order in the ancient IE languages. It only needs to be remarked that the position of NPs relative to each other is unconstrained; in the case of the finite verb, a number of languages display a tendency toward final position, to a higher (such as Hittite) or lesser (such as Latin) extent, while in other languages, notably Greek, the verb can occur in any position.⁴

3.1 Discontinuous Constituents

The fact that attributive adjectives and adnominal genitives need not be adjacent to the head noun in the ancient IE languages is well known, even though the occurrence of discontinuous constituents was clearly not felt as normal by speakers, as shown by the fact that ancient Greek grammarians refer to it with a special name, *hyperbaton*.

There are different types of discontinuity: parts of a NP or of a PP can be separated by intervening P2 clitics or some other postpositive,⁵ or they can be separated by heavier lexical items. In (1) both types of *hyperbaton* occur:

- (1) **toîs** **mèn toínun állois** **hápasin anthrópois** **horô**
 ART.DAT.PL.M PTC PTC other.DAT.PL.M all.DAT.PL.M man(M).DAT.PL see.PRS.1SG
toîs **krinoménois**
 ART.DAT.PL.M charged. PTC.PRS.DAT.PL.M
 ‘I see that, for all other men under trial, . . . (lit.: ‘all other accused men’)’
 Dem. 21.236 (Ancient Greek).

The fact that a P2 clitic or some other sort of particle is positioned inside a NP only creates weak discontinuity; it makes the NP in a sense ‘less discontinuous’ than the occurrence of some other type of lexical item, as also shown by data from diachrony discussed below. However, both types of discontinuous constituents occur both in poetry and in prose in several languages, such as in Greek, Sanskrit and Latin.

3.1.1 Adpositional Phrase

A class of words deserves to be paid special attention to: the class of preverbs. Indeed, numerous scholars (e.g. Meillet and Vendryes 1924: 520, Hewson and Bubenik 2006) think that their syntactic development played a major role in bringing about configurationality in the IE languages. The original syntax of preverbs is best preserved in Vedic and Homeric Greek. Preverbs were local adverbs, which could semantically be closer to the verb, to a noun indicating some spatial relation, or stand free. Example (2) contains two occurrences of *eis/es* ‘to, into,’ the first of which indicates that the particle could already head a prepositional phrase in Homeric Greek, while the second demonstrates its use as a free adverb:

- (2) **nêa** **mélainan** **erússomen** **eis hála**
 ship(F).ACC.SG black.ACC.SG.F drag.SUBJ.AOR.1PL to sea(F).ACC.SG
dían, . . . **es d’ hekatómbên** **theíomen**
 divine.ACC.SG.F to PTC hecatomb(F).ACC.SG put.SUBJ.AOR.1PL
 ‘Let us now drag a black ship to the shining sea, and place on board a
 hecatomb.’ Hom. *Il.* 1.141–143 (Ancient Greek).

In addition, the particles could coalesce with the verb as inseparable preverbs, as they partly already did in Homeric Greek. This state of affairs, which is normal in Classical Greek, can be seen developing in Homer: the second occurrence of *es* in (2) can be understood as the source for the verb *estíthēmi* ‘embark,’ as used for example in Herodotus, in occurrences such as:

- (3) **esthémēnoi** tékna kai gunaïkas
 embark.PTCP.AOR.NOM.PL.M child(N).ACC.PL and wife(F).ACC.PL
 ‘having embarked (their) children and wives’ Hdt. 1.164.3
 (Ancient Greek).

Often the syntactic status of the particles in Homeric Greek is not as clear as in (2). In occurrences such as (4):

- (4) purês **epibánt’** alegeinês
 pyre(F).GEN.SG.F set.upon.PTCP.AOR.ACC.SG.M grievous.GEN.SG.F
 ‘(Menelaos) set upon the grievous pyre’ Hom. *Il.* 4.99 (Ancient Greek),

later grammarians interpreted *epibánt(a)* as a compound verb form (*epí+bainō*), this being the only possibility in their variety of Greek; however, given the fact that postposing of such particles is common in Homer, and considering various metrical factors, one could take *epí* as connected with the noun *purês*, rather than with the verb. It must be remarked that, since only prepositions remained in later Greek, it seems plausible that postposed particles could not head syntactic phrases in Homer (i.e. that they were not real postpositions, but remained adverbs). Rather, possible pre- or postpositional, as well as preverbal function of the particles emerged⁶ from usage in Homeric Greek, and later only some possibilities (preposition and preverb) became grammaticalized in Classical Greek.⁷

Similar occurrences where a particle may be taken as either a preverb or a postposition are known from Vedic:

- (5) dāsvāmsam **úpa** gachatam
 offer.PTCP.PRS.ACC.M toward go.IMP.PRS.2DU
 ‘approach the one who is offering’ RV 1.47.3 (Vedic Sanskrit),

and, according to Delbrück (1893: 654), they served as the source for postpositions in Classical Sanskrit: similar to Homeric Greek, Vedic allowed both pre- and postposing of the particles to nouns, while Classical Sanskrit only allows one of these possibilities (contrary to Greek, it is postposing that prevailed in Sanskrit).

In most other ancient languages, adpositional phrases already seem to exist as configurational constructions from the time of the earliest sources; in each given language the position of adpositions is fixed and they cannot normally be separated from their complement.⁸ One may wonder why adpositions became grammaticalized at such an early time. Apparently, if one follows the development in Greek, this depends on two factors:⁹ in the first place, since spatial meaning of cases was generic,¹⁰ it was customary to specify it with an adverb; in addition, meaning extensions once triggered by the context became conventionalized and became part of the meaning of the particles. This happened especially with the development of nonspatial meanings. Thus, the particles started to build semantic constituents with nouns inflected in certain cases. Given their frequent co-occurrence, cases were increasingly felt as associated with certain particles and certain meanings of the particles, and ended up being governed when their contribution to the meaning of the phrase could no longer be associated to the meaning that they could express when occurring alone.

3.1.2 Noun Phrase

The following example shows how discontinuous constituents could occur in Latin:

- (6) Arma virumque cano, **Troiae** qui
 arm(N).ACC.PL man(M).ACC.SG+and sing.PRS.1SG Troy(F).GEN REL.NOM.SG.M
 primus **ab oris** Italiam, fato
 first.NOM.SG.M from shore(N).ABL.PL Italy(F).ACC destiny(N).ABL.SG
 profugus, **Laviniaque** venit **litora**
 fugitive.NOM.SG.M Lavinian.ACC.PL.N+and come.PRF.3SG strand(N).ACC.PL
 ‘I sing the arms and the man, who, exiled by destiny, first came from
 the Trojan shores to Italy and to the Lavinian strand.’ Verg. *Aen.* 1.1–3
 (Latin).

(Similar examples from the other ancient IE languages can be found in the literature.)

Example (6), from poetry, contains (i) a discontinuous constituent which contains a genitive modifier (*Troiae ... ab oris*) separated from the head noun by the subject and a predicative adjective (*qui primus*), and (ii) an attributive adjective (*Lavinia . . . litora*) separated from the head noun by the finite verb (*venit*). Such an example may suggest that anything goes, but the data from Latin prose offer a different picture.

Herman (1985) gives a brief but insightful historical survey of discontinuity within Latin NPs. His data from Cicero show that, in the vast majority of cases,

discontinuity is either caused by quasi-clitic items, such as the verb ‘be’ in (7), postpositive connectives, pronouns or by items that are themselves syntactically connected with the NP, as in (8):

- (7) si tibi hoc sumis, nisi qui
 if 2SG.DAT DEM.ACC.SG.N ASSUME.PRS.2SG if.not REL.NOM.SG.M
 patricius sit neminem bono esse
 patrician.NOM.SG.M be.SUBJ.PRS.3SG nobody.ACC.SG good.ABL.SG.N be.INF
genere natum
 birth(N).ABL.SG born.PTCP.ACC.SG.M
 ‘if you assume that nobody is from a good family, unless he is a
 patrician’ (Cic. Mur. 15);

- (8) **virum bonum** tuaque amicitia
 man(M).ACC.SG good.ACC.SG.M POSS.2SG.ABL.SG.F+and friendship(F).ABL.SG
dignum
 worthy.ACC.SG.M
 ‘a good man, and (one) worthy of your friendship’ Cic. *Fam.* 13.51 (Latin).

Interestingly, discontinuous constituents in Early Latin display more varied patterns than they do in Cicero, while in Vulgar Latin sources, including the letters of Claudius Terentianus, the Gospels and the *Peregrinatio Aegeriae*, not only are they infrequent, but the occurring ones contain some postpositive, most often *autem* ‘however’ (cf. Herman 1985). Such postpositives are items with a high token frequency, and their occurrence within a NP results in a somewhat formulaic construction. Thus, configurationality within the NP seems to be achieved by the second century CE, or possibly even earlier (see below, section 4).

With respect to non-configurationality, the behavior of adjectives is most interesting, since adjectives in non-configurational languages that allow discontinuous NPs have been shown to display certain features which can be summarized in their tendency to be ‘nouny,’ rather than ‘verby.’ According to Baker (2001: 1437) ‘discontinuous constituents are possible only in languages with no more than a weak N/A contrast.’ Indeed, IE adjectives can function as arguments with no restrictions, as shown in (9):

- (9) tābhiḥ jvalantībhiḥ dīpyamānābhiḥ upauteti
 DEM.INS.PL flaming. PTCP.INS.PL shining.PTCP.INS.PL approach.PRS.3SG
 rājānam
 king(M).ACC.SG
 ‘With the flaming, shining ones (sc. weapons) he approaches the king.’
 AB 8.24.6 (Vedic Sanskrit).

(Another occurrence is the participle *dāsvāmsam* ‘the offering one’ in (5)).

Examples are available from all ancient IE languages, as well as from many modern ones. Bhat (1994: 170–171) calls attention to the fact that Indian grammarians found it difficult to distinguish between *viśeṣana* ‘qualifier’ and *viśeṣya* ‘qualified’ in a noun-adjective construction independently of the meaning intended by speakers in each given context. The sixth–seventh century grammarian and philosopher Bhartṛhari, for example, ‘maintains that the . . . two terms . . . represent syntactic categories . . . ; they refer to a word as a member of a combination and not as an isolated individual.’

Indo-Europeanists have long pointed out that the distinction between nouns and adjectives was weak in PIE, the only difference being that adjectives inflect for gender. In some languages, there are adjectives which do not even display gender variation. For example, Greek has a group of adjectives with no gender distinction. Interestingly, these are adjectives that indicate properties which are usually predicated of human beings; consequently they are mostly used with masculine or feminine nouns, thus behaving similarly to the (much more numerous) adjectives which only display a two-gender distinction between neuter and non-neuter. Examples are *pénēs* ‘poor,’ *Héllēn* ‘Greek,’ *phugás* ‘fugitive.’¹¹ Indeed there is nothing else than frequent co-occurrence with a noun that prompts one to identify such lexical items as adjectives, rather than nouns. According to Brugmann (1888: 420–426), the border between nouns and adjectives is fluid in all IE languages, and many adjectives originated from nouns which, given their meaning, were often used as appositions to other nouns. As an example, Brugmann mentions Old High German *fruma* ‘advantage,’ which turned into an adjective by the Middle High German time (*vrum*, cf. Modern High German *fromm*), and writes: ‘Clearly adjectivization started in the appositional and predicative position’ (1888: 419).¹² Thus, since they often accompanied nouns, rather than standing alone, such items were used as adjectives even before developing agreement (and some did not, as noted above). Again, as in the case of appositions, adjectives emerged as single items in actual usage, but a morphosyntactic distinction from nouns, which characterizes them as a category, only developed later.¹³

Meillet and Vendryes (1924: 530) describe the situation as follows: ‘Adjectives are by no means connected with nouns. They are usually inflected in the same case, same number, and, as distinctive for adjectives, same gender . . . , but because they refer to the same entity.’¹⁴ In other words, adjectives are predicated of nouns, rather than being dependents. This situation, which is traditionally reconstructed for PIE, was being abandoned in the ancient IE languages. Among other developments toward configurationality is the creation of definite articles out of demonstratives, which took place in Greek during the time

- (13) Caesar exercitum reduxit et in Aulercis
 Caesar.NOM army(M).ACC.SG take.back.PRF.3SG and in Aulercian.ABL.PL.M
 Lexoviisque, . . . , in hibernis conlocavit
 Lexovian.ABL.PL.M+and in winter.camp(N).ABL.PL settle.PRF.3SG
 ‘Caesar took his soldiers back and let them settle in the winter camp
 among the Aulercians and the Lexovians’ *Caes. Gal.* 3.27 (Latin);
- (14) dverginn mælti, at sá baugr skyldi vera
 dwarf say.PRF.3SG that DEM.NOM.SG.M ring(M) should.PRF.3SG be.INF
 hverjum hofuðsbani, er atti
 whosoever.DAT.SG death REL have.PRF.3SG
 ‘The dwarf said that that ring should bring death to anybody who
 possessed (it)’ (Old Icelandic, from Sigurðsson, 1993, p. 248).

The above examples suffice to show that the antecedent of the null object can have different grammatical relations. Example (13) contains an occurrence of null direct object in coordinated clauses. Such pattern was obligatory in Latin and presumably in other languages as well.¹⁵

How can such null objects occur freely? The explanation lies in the relation between the verb and the noun phrases, and was indicated long ago by Meillet and Vendryes, even though not directly in reference to null objects, but as an explanation for the fact that the same verb could occur with NPs in different cases, depending on semantic factors expressed through case variation. Meillet and Vendryes (1924: 522) write ‘An Indo-European verb did not ‘govern’ the case of its complement; rather, the noun juxtaposed to the verb was inflected in the case required by the meaning that was expressed by the case itself.’¹⁶ Such an approach also implies a different view on verbal valence. In a language in which verbs do not govern complements, their valence is purely semantic, and not syntactic.¹⁷ Consequently, there is no slot that must obligatorily be filled, and the distinction between transitive and ‘absolute’ use of transitive verbs loses relevance.

Thus, in PIE there was no real valence distinction between transitive and intransitive verbs. Note that this conclusion is in accordance with the well-known fact that a passive diathesis is a late development, completely achieved only in the individual languages, while PIE had no real voice distinction. Transitivity started as an epiphenomenon connected with usage: on account of their meaning, a wide number of verbs were commonly associated with NPs in the accusative; the association increasingly came to be felt as obligatory, which in the end resulted in the disappearance of null direct objects and in a general increase in transitivity.

4. From Latin to Romance

Latin displays a number of features of non-configurationality together with other features that point toward ongoing change. Prepositional phrases had fixed word order and case variation with the same preposition was reduced to a minimum. Discontinuous NPs, as shown in 3.1.2, could occur in prose with a number of constraints. In this respect, data from Petronius' *Satyricon* (first century CE) shed some light on future developments. Herman (1985: 352–353) remarks that the frequency of hyperbaton, which used to occur in around 20 percent of the NPs in classical prose, drops to 4 percent in the *Caena Trimalchionis*, a part of the book which is assumed to closely mirror the spoken language. In some of the occurrences it is not even clear whether one can really speak of discontinuity, as in the case of (15):

- (15) multa pecora habet, multum lanae,
 many.ACC.PL.N CATTLE(N).ACC.PL have.PRS.3SG much wool(F).GEN.SG
caput praeterea **durum**
 HEAD(N).ACC.SG especially hard.ACC.SG.N
 'He has many head of cattle, plenty of wool, an especially hard head.'
 Petr. 39 (Latin).

Herman further remarks that a more complicated occurrence of hyperbaton in the same text indicates an attempt by Trimalchio, an illiterate but rich man, to conform to a higher and prestigious linguistic register. This fact should make one wonder how close to the spoken language of the (mostly illiterate) population could hyperbaton have been at the time of Cicero, just a century earlier.

In the case of null objects, the development in the direction of configurationality apparently started later.¹⁸ By the time of the *Vulgate*, null direct objects could only occur in coordination, and even in such constructions they were no longer obligatory, as shown in (16), a pattern unknown to Classical Latin, where the whole sentence already displays the structure common in the Romance languages:

- (16) et obtuli **eum** discipulis tuis et
 and bring.PRF.1SG 3SG.SCC.M disciple(M).DAT.PL POSS.2SG.DAT.PL.M and
 non potuerunt curare **eum**
 NEG can.PRF.3PL cure.INF 3SG.ACC.M
 'And I brought him to your disciples, but they could not cure him.'
 Mt. 17.16 (Latin).¹⁹

The development in the Romance languages is of great interest in the light of the ongoing development of a system of pronominal clitics. In Medieval Italian,

a head marking language, and mentions the following example, originally from Tesnière:²²

- (21) Il la lui a donné, son père, à Jean, sa moto
he it.F him has given his father to John his motorbike
'John's father gave him his motorbike.' (French; from Tesnière, 1959: 175)

Note that clitic doubling also makes possible binding of the possessive *son* with the oblique NP *à Jean*, which would be impossible with a normal word order and a normal intonation:

- (21)' *Son_i père a donné à Jean_i sa moto.
'His_i father has given John_i his motorbike.' (French; ungrammatical
with *his_i* = *John's*)

The pattern in (21), including the peculiar behavior of possessives and anaphoras in general, is typical of non-configurational languages of the Mohawk type, i.e. head marking ones.²³ Thus, spoken French is apparently abandoning configurationality and moving in the direction of a new type of non-configurationality, where the order of constituents is free, discontinuous constituents are not allowed, and, if clitics ever become completely obligatory, null objects will be allowed again, in sentences with no overt nominals. The fact that ongoing change can easily be observed in spoken language, but to a much lesser (if any) extent in the literary standard, shows how syntax is created by usage: non-configurational features of spoken French emerge in actual utterances from the need to indicate the information status of constituents.

5. Two Types of Non-Configurationality

The two different types of non-configurationality introduced in section 2 turn out to be relevant to the development sketched in section 4 regarding Latin and the Romance languages. From the data discussed above, the two types seem to have quite different features: while in the French sentence in (21) the function of the NPs is indicated through cross-reference with clitics hosted by the verb, in Latin it is case-marking which fulfills this function. Thus, a French noun, outside the context of a sentence, is not specified for its function, whereas a Latin noun bears such specification at least in part even independent of any context.

In section 2 I mentioned Jelinek's PAH, which posits empty pronouns in languages of the Latin (and Jiwari) type. Such a theory has the effect of explaining non-configurationality in the same way for both head and dependent marking languages. Apart from general considerations on the need for empty

categories, which essentially depends on one's theoretical beliefs, I doubt that Jelinek's hypothesis may help understand non-configurationality in any framework, since it blurs the distinction between two different phenomena.

In a head marking language such as spoken French, verbs do have a syntactic valence, which is filled by (obligatory) pronominal clitics. Co-referring nominals may be added if needed; they are appositional to such clitics. In dependent marking non-configurational languages, on the other hand, the verb does not have a syntactic valence: in other words, all verbs are so to speak intransitive, and it is normal for a verb to be able to stand alone. Nominals are added based on the meaning of the verb (its semantic valence), which ultimately refers to our knowledge of what type of participants are commonly involved in an event. In such a language, there is no distinction between arguments and adjuncts, and in a sentence such as:

(22) Seymour cut the salami with a knife

all participants are on the same plane, none is obligatory, and the PP *with a knife* is not more optional than the NP *the salami*.

Such a state of affairs, which, as we have seen, is traditionally reconstructed for PIE, indicates that relations between a verb and an inflected noun are appositional.²⁴ More in general, all relations between single items seem to be appositional in such languages, as we have seen in the case of adjectives. Put in this way, the same type of relation holds between the verb and possible co-occurring nominals on the one hand, and between a noun and possible co-occurring adjectives on the other. Again, since adjectives are case marked in the same way as nouns, they bear some specification of their function independent of the noun they are apposed to. This explains why dependent marking languages allow for discontinuous constituents, but head marking ones do not.

The ancient IE languages were, to a varying extent, at least partly configurational.²⁵ In particular, in the case of verbal valence, ongoing development of transitivity can be observed at various stages. Cases were to a great extent obligatory with specific verbs, and no longer contributed an independent meaning. In the meantime, the distinction between arguments and adjuncts gained relevance. It became important for a verb, even in cases in which a direct object could be recovered from the context, to co-occur with an overt indicator of transitivity: this eventually led to complete disappearance of null objects, a process which can be observed not only in Romance, but in other languages as well, which did not necessarily go as far as to develop a system of clitics. The Germanic languages are a case in point. Null direct objects, which were common in Old Icelandic, are confined to coordinated clauses in Modern Icelandic (Rögnvaldsson 1995).

6. Why Did Configurationality Arise?

In the preceding sections I have shown how semantic constituency turned into syntactic constituency in the IE languages, starting from adpositional phrases, then spreading to NPs, and finally to the VP and eventually causing constituents order to be obligatory, though to varying extents in the different languages. This last development is usually explained as a consequence of the loss of morphological cases. However, it is questionable that configurationality has been brought about by the disappearance of cases. Rögnvaldsson (1995) remarks that Old Icelandic, which has features of non-configurational languages, has the same number of cases as Modern Icelandic, which is configurational. A thorough discussion of this issue is beyond the scope of the present discussion; here I would like to add some final remarks on the relation between the existence of a case system and the rise of configurationality.

Baker (2001: 1437) remarks that, for discontinuous NPs to be allowed, a 'particular kind of case marking is required.' Herman (1985: 347) goes as far as to argue that indicating what lexemes belong to a certain constituent is a function of case systems in just the same way as indicating grammatical relations. One could conclude that the (partial) loss of cases in a number of IE languages caused discontinuity to be no longer possible: however, this conclusion hits against the evidence from actual data, which clearly point toward an earlier development of configurationality within NPs. In other words, the change seems to have worked the other way around: discontinuous NPs became increasingly dispreferred, and cases started to be lost only after the only possible position of attributive adjectives had become adjacency to the head noun. In section 3.1.1, I remarked that the grammaticalization of adpositional phrases brought about increasing loss of independent semantic contribution of cases to the meaning of the construction: such a development preceded the loss of the case system by several centuries.²⁶

Thus, even if desemantization of cases possibly started at an early time, it seems to be a consequence, rather than a cause of the rise of configurationality. Configurationality rather seems to have risen as a by-product of semantic relatedness of certain items, which used to frequently co-occur: what could initially be regarded as semantic constituents, as for example a spatial adverb specifying the precise spatial meaning of a NP inflected in a certain case, underwent grammaticalization. As a result of such a process, cases increasingly lost their meaning and started losing their independence. Nouns that indicated properties often accompanied other nouns, and originally agreed with them only in case. The fact that they mostly co-occurred with other nouns caused them to be felt as subordinate, and brought about agreement in gender: this was the first step in the direction of configurationality within NPs. In much the same

way as it had happened for adpositional phrases, the syntax of NPs also became increasingly grammaticalized and the position of adjectives increasingly fixed. Frequent co-occurrence of certain verbs with NPs inflected in the accusative brought about the grammaticalization of transitivity, which in its turn had the effect of making direct objects obligatory even when they were not expressed through an NP. Various developments connected with configurationality had the final effect of making sentence structure less flexible: whereas the order of constituents in the ancient languages was largely determined by the information structure of the sentence, in many modern languages it mostly depends on syntactic factors.

However, non-configurationality could be restored again, as shown by ongoing change in French. Such possible downfall of configurationality would bring about a completely different type of non-configurationality, in which constituency would still be relevant for NPs and PPs, but word order would again be determined by information structure, and null objects might occur again, as a result of the reanalysis of pronominal clitics as agreement morphemes.

Notes

1. I thank Mark Baker, Vit Bubenik, Terje Faarlund, John Hewson, Paul Hopper, Luca Lorenzetti and Carlotta Viti for helpful comments on the content and style of this chapter.
2. Jelinek's hypothesis has been challenged especially within the LFG framework; see Baker (2001) for discussion.
3. In particular, Røgnvaldsson (1995) believes that null anaphora does not have much to do with non-configurationality, and argues that if it did, then pro-drop languages such as Italian should be considered non-configurational. Clearly this argument rests on a misunderstanding: null direct objects in languages such as the IE ones have nothing to do with null subjects, since subjects, but not objects, normally agree with the verb.
4. See Dover (1960) and Welo (2008); for a different view, see Taylor (1994).
5. Postpositives are items which cannot stand in initial position in a sentence; beside pronouns, various types of connectives and discourse particles are postpositive, as well as modal particles. Postpositives are often enclitic, but not necessarily, and are usually placed in P2 (second position), following Wackernagel's Law. In Greek, postpositives in the same sentence can be placed in two different positions: in this case, connectives are always in P2, while pronouns appear in a more internal position (see Dover 1960, Luraghi 1990b).
6. I use 'emerge' in the sense of Hopper (1998) as indicating a synchronic circumstance. Such a circumstance may or may not later be reflected in a diachronic development.
7. Indeed, such a state of affairs is less striking than one may think at first sight: even in a highly configurational language such as English there are numerous occurrences in which the categorial status of a particle (preposition or verb satellite) cannot be gauged, as in *she has fit into the mold*, discussed in Thompson and Hopper (2001: 45–46).

8. Space adverbs in Anatolian would deserve more discussion, but for reasons of space I cannot go into the issue here; see Hewson and Bubenik (2006) for extensive discussion and reference regarding all other IE languages.
9. See Luraghi (2003b) for extensive discussion of such development.
10. In the sense that cases only indicated general spatial relations; more specific ones, such as inessive vs. adessive or superessive, for example, were indicated by spatial adverbs.
11. Kühner and Blass (1890: 547–551) contains a discussion of a number of Greek adjectives that do not inflect for gender. The authors show that some of these adjectives always refer to human males, while some others always refer to human females: thus, their categorial status seems closer to nouns (they have inherent gender); only their syntactic behavior (they accompany other nouns) allows one to consider them adjectives.
12. ‘Es ist klar, dass die Adjektivierung in der appositionellen und prädikativen Stellung begann.’
13. Most likely, the hypothesis that no adjectives should be reconstructed for PIE is too strong. In particular, a class of deverbal adjectives with the suffix *-u* is widely attested, with cognates in Hittite, Sanskrit, Greek and Germanic among others (see Gusmani 1968: 91–119). In fact all languages appear to have a class of basic adjectives such as ‘bad/good,’ ‘many/few,’ ‘broad/narrow’ (some of the meanings of the *-u* adjectives), as argued in Dixon (1982).
14. ‘L’adjectif n’est nullement lié au substantif. Il est généralement au même cas, au même nombre, et, ce qui est le trait caractéristique de l’adjectif, au même genre . . . , mais parce qu’il s’applique au même objet.’
15. An occurrence such as *Mustum si voles totum annum habere, in amphoram mustum indito* ‘If you wish to keep grape juice through the whole year, put the grape juice in an amphora’ (Cat. Agr. 120) is not counterevidence to obligatoriness of null objects in coordination, as Ross (2005: 123) suggests: indeed the two clauses are not coordinated, rather, the first is a subordinate clause and the second is the main clause. Some occurrences in which a pronominal direct object occurs in coordination, for emphasis or for disambiguation in an otherwise unclear context, are discussed in Luraghi (1997); see further Luraghi (2003a) and (2004).
16. ‘Un verb indo-européen ne ‘gouvernait’ pas le cas de son complément; mais le nom apposé au verbe se mettait au cas exigé par le sens qu’il exprimait lui-même.’
17. Semantic valence refers to the number of participants which are typically involved in an event, while syntactic valence refers to the number of actual constituents which a verb needs in order to stand in a grammatically acceptable construction (see Payne 1997: 169–170 and Luraghi and Parodi 2008: 197–199).
18. The fact that discontinuous constituency disappeared at an earlier time with respect to null objects is in accordance with the implicational scale in Baker (2001: 1437), which states that the existence of discontinuous constituents in a language implies the occurrence of pronoun drop, but not the other way around.
19. Similar to Latin, New Testament Greek also attests to the extension of anaphoric pronouns to coordinated clauses, as in this passage, in which the third person pronoun *autón* occurs in both clauses and corresponds to the two occurrences of *eum* in (16); however, the occurrence of a pronoun in the second clause in Latin does not always match Greek, especially where Greek contains participles, and cannot be considered simply a matter of translation; see the examples in Luraghi (1998).
20. The development in Medieval Italian is discussed in Luraghi (1998).
21. The clitic may be omitted, in which case the left dislocated constituent is focused and contrastive, but in this case it does not trigger gender agreement with compound forms of the verb: *La torta ho mangiato tutta (non la macedonia)* ‘I ate up the whole

- cake, not (the whole) fruit salad.’ Note that the verb form in this sentence contains the participle *mangiato* (masculine) rather than *mangiata* (feminine, as in (18)).
22. Clitic doubling is not limited to the Romance languages but also exists elsewhere in the modern IE languages, such as, for example, in Modern Greek and in Macedonian, cf. Bubenik (2001a), who argues that Macedonian has gone as far as to become completely head marking in this respect (2001: 64–65).
 23. See Baker (2001: 1436) with further references.
 24. I hasten to say that this is not the case in any of the Indo-European languages at least for the subject, which triggers agreement with finite forms of the verb; subject-verb agreement is reconstructed for PIE as well. However, the existence of impersonal verbs (as Latin *taedet* ‘be bored,’ Hittite *irmalya-* ‘be/become sick,’ Gothic *huggrjan* ‘be hungry,’ and various other) may be a trace of an earlier stage, at which subject-verb agreement had not yet developed, and the subject was on the same plane as other constituents with respect to the verb (i.e., it was inflected in a case that indicated its semantic role, rather than a grammatical relation). For reasons of space, I am not going to speculate further on this matter here.
 25. This is an important point, which must be stressed: non-configurational syntax can be reconstructed for PIE on the basis of features of non-configurationality in the attested languages, which had all already moved in the direction of configurationality.
 26. As I have already pointed out, grammaticalization of adpositional phrases was the first move in the direction of configurationality in the IE languages. One may wonder why. I think that the reason why adverbs changed into adpositions giving birth to adpositional phrases at an early stage may depend on the fact that they specified the semantic role of accompanying nouns. In other words, already at the stage at which adverbs were independent their function was similar to the function of cases, that is of bound morphemes: adverbs were already more grammatical than other lexical items. Once they had changed into adpositions, they became the equivalent of bound morphemes, as shown by the fact that they partly substituted for cases in languages in which the case system was lost completely, such as the Romance languages. Clearly, this development is different from the development that led apposed nouns to develop into adjectives, since adjectives are far from being the equivalent of bound morphemes even in the modern IE languages.

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Subordination¹

Dorothy Disterheft and Carlotta Viti

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1. Nonfinite Subordination

1.1 Introduction

The infinitive is the most common type of nonfinite subordination. Traditionally, historical linguists considered languages like Classical Latin, Classical Greek and contemporary European languages as canonical examples of infinitive constructions. These languages have fully developed infinitives which are clearly part of the verbal system. Here are a few familiar examples from English:

- (1) as adverbial clause: *I attended university (in order) to learn Sanskrit;*
- (2) as complement to main clause verb:
 - a. the subject of the infinitive is controlled by the subject of the main verb:
I want to go;
 - b. the subject of the infinitive is different from the subject of the main verb:
I want her to go.

Contrary to these languages, Proto-Indo-European had no single infinitive form. Instead, its early daughter languages employed the reflexes of earlier nominalized verbs, with varying degrees of closeness to verbal paradigms (cf. Disterheft 1980). Some languages such as Vedic (3) and Old Irish (4) use nominalizations that are structurally identifiable as nouns in oblique cases:

- (3) Vedic: *-dhyai*, *-sani*, *-taoái*, *-ane*, *-ani*, *-mane*, *-vane*, *-tari*, *-tani*, *-ase*, *-tave*, *-tum*, *-(t)aye*, *-tim*, *-tau*, *-e*, *-am*, *-i*, *āya*;
- (4) Old Irish: **-tu-*, **-ti-*, *-men-*, *-mon-*, **-eno-*, **-to-*, **-ti-*, **-yā-*, **-ye/o*, **-aktos*, **-tlo-*.

Morphologically distinct infinitives are found in Hittite (5) and Classical Sanskrit (6):

- (5) Hittite: *-anna*, *-(u)wanzi*;
- (6) Classical Sanskrit: *-tum*.

In some other languages such as Ancient Greek (7) and Classical Latin (8) infinitives are completely divorced from nominal paradigms and are differentiated according to tense and voice:

- (7) Ancient Greek: active *-ein*, *-nai*; middle/passive *-(e)sthai*; Lesbian *-menai*, Homeric *-men*;
- (8) Latin: present active *-re*, present passive *-rī*; perfect active *-isse*; perfect passive *-tum esse*; future active *-tūrum (esse)*, future passive *-tum irī*.

The infinitive category can be viewed as a continuum between Vedic and Old Irish on the one hand and Latin and Ancient Greek on the other. The other Indo-European languages are distributed between these two extremes. Diachronically this continuum implies different stages from nominalizations to verbal forms which distinguish tense and voice.

1.2 Stage I: Indeterminate Infinitives

The chief prerequisite to reanalysis of one category as another is indeterminacy, which means that the linguistic unit in question is open to more than one analysis: the old nominalization and the new infinitive. Vedic and Old Irish exhibit the most indeterminacy of all the Indo-European languages because the majority of their subordinate structures are indeterminate, with no difference in meaning between the two. For example, adverbial clauses are indistinguishable from simple nominalizations (9).

- (9) *ṭṛtīyam asya vṛṣabhāsya dohāse*
 three.times his bull.GEN suckle.DAT.NMLZ

dásapramatim janayanta yóṣaṇaḥ
 whose.protection.is.tenfold.ACC they.gave.birth maidens.NOM
 ‘Three times did the maidens give birth to the one whose protection is
 tenfold for suckling the bull (NMLZ) / in order to suckle the bull (INF)’
 (RV I.141.2cd)

All Old Irish purpose clauses carry dative case marking; since distinct dative case marking is on the wane, dative is reinforced with a preposition (*do* ‘to,’ sometimes *fri* ‘towards’). Objects are, without exception, genitive.

- (10) berit in soscéle do imthrenugud *ueteris*
 they.carry the gospel.ACC to confirm.DAT.NMLZ old.GEN
 ‘They carry the gospel for confirmation of the Old (Testament)
 (NMLZ)’ / in order to confirm the Old (Testament) (INF) (Wb 18c10)

The indeterminacy of adverbial clauses in these examples is indicated by the alternative nominal/infinitive translations. The same type of indeterminacy is seen in complement relations, in both Vedic (11) and Old Irish (12). In Old Irish, the indeterminate verbal noun in this function is accusative; its object, if a lexical noun phrase, is genitive; when the object is a pronoun, it is always a possessive clitic.

- (11) sám anyámanyam arthayanty étave
 together each.other.ACC they.strive come.DAT.NMLZ
 ‘They strive for union with each other (NMLZ)’ / to unite with each
 other (INF) (RV V.44.11c)

- (12) adcobra ícc *omnium*
 he.desires save.ACC.NMLZ all.GEN
 ‘He desires the salvation of everyone (NMLZ) / to save everyone (INF)’
 (Wb 28b2)

This particular construction is absolutely rigid in Old Irish: it is the standard form of complementation and never varies from the canonical accusative case verbal noun and genitive object. Thus all Old Irish accusative verbal nouns which complement mental verbs, verbs of saying and desiring, in addition to ‘expect, love, endure, neglect, deserve’ are potentially indeterminate.

1.3 Stage II: Acquiring Verbal Syntax

During the next stage of development, Irish and Indic move away from the indeterminacy which earlier was their hallmark. Such indeterminacy was shed

in two ways: by marking the noun phrases which the infinitive governs with a case other than genitive; by assigning to the infinitive a case different than that of a noun phrase in the same position. Avestan and Hittite infinitives also display this stage of development.

Stage I purposive infinitives continue to appear side-by-side in the RigVeda with the more verbal ones of Stage II. Example (13) contains two dative nominalizations, still members of nominal paradigms even though their accusative objects mark them as having a higher degree of verbal characteristics.

- (13) ā eṣu dyāvāpṛthivi dhātam mahād
to these.LOC Heaven.and.Earth.VOC grant.IMP2DU greatness.ACC
asmé viréṣu viśvácaṣaṇi śráva
us.LOC heroes.LOC all.people.ACC fame.ACC
pṛkṣám vājasya sātáye
nourishment.ACC power.GEN win.DAT.INF
pṛkṣám rayá utá turváṇe
nourishment.ACC wealth.INSTR and reach.DAT.INF
‘Grant greatness (and) fame common to all the people to these heroes
of ours, O Heaven and Earth, to win nourishment of power and even
reach nourishment through wealth’ (RV X.93.10)

Although we expect infinitives at this stage to acquire case marking that would mark them as nonarguments of the matrix verb, purposive infinitives continue to be dominated by dative case in the RigVeda. Vedic complements to verbs rarely exhibit indeterminacy. Most use an infinitive in a non-accusative case, such as a dative or a locative (14), while object of the infinitive is typically accusative.

- (14) svayám kavír vidhartári vípṛāya rátnam
himself poet.NOM distribute.LOC.INF quaking.one.DAT wealth.ACC
icchati
he.wishes
‘The poet himself wishes to distribute the wealth to the quaking one’
(RV IX.47.4ab)

In contrast to Vedic, the Irish dative verbal noun of purpose and accusative verbal complement never assign to objects a case other than genitive. This fact ensures that the previous two verbal noun patterns stayed at the indeterminate end of the spectrum and never developed further verbal characteristics. Furthermore, it has led many Celticists to claim that Old and Middle Irish had no infinitive, a position that is contradicted by an innovating complement type

which starts to appear in the eighth century, becomes quite common in later Old Irish and is a central infinitival structure in Middle Irish. This new one fits squarely in Stage II: while the morphology remains rooted in nominal paradigms, the syntax follows patterns which are typical of complements which have strongly verbal characteristics. In contemporary syntactic theory, this is a Raising structure, i.e., one in which a noun phrase has been moved from the embedded (subordinate) clause to the matrix clause. Because the infinitive's subject is no longer in its clause, this noun phrase acts like a member of the higher one, and its syntactic behavior is controlled by the main verb. This means that the noun phrase which is logical subject of the infinitive stands outside of the embedded clause and gets its object case assignment from the main verb, as in the eighth century example (15), where the subject of the infinitive is the accusative *in neress* 'the heresy.'

- (15) rocúala in neress cetna do forbairt inna cathraig dia es
 he.heard the heresy.ACC same to increase.DAT.INF in.the city after him
 'He heard that the same heresy was increasing in his city after him'
 (Liber Hymnorum 311.34–35)

In (16), the main clause verb is passive and thus the raised noun phrase (*essreud*, itself a verbal noun) must be nominative.

- (16) Is cian do-rairngred in se, no mbíthe int áugaire
 it.is long it.was.prophesied the following PTC is.struck the shepherd.NOM
 ocus essreud fiad doínib do buith
 and scattering.NOM.NMLZ before people.DAT to be.DAT.INF
 fora glancháirib
 upon.the pure.DAT.PL
 'Long has it been prophesied the shepherd would be struck down and
 a scattering be upon his pure ones among the people' (Blathmac 44.127)

Hittite and Old Iranian, on the other hand, never exhibit the indeterminacy of Stage I. However, they definitely have Stage II characteristics. Hittite infinitives are formed from the dative cases of two heteroclites: *-anna* < *-(a)tar/n*; *-(u)wanzi* < *-war/n*. The Hittite purposive infinitive most often takes an accusative object (17).

- (17) nu šA KUR^{URU} Ḫatti DINGIR.MEŠ antuḫšušš-a ešḫar
 PTC of land Hatti gods man.ACC.PL=and blood.ACC
 iyauwanna ḫalziššanzi
 make.INF they.call
 'They call the gods and the men of Hatti in order to make blood(shed)'
 (KUB IV 1 II 19, 20)

Infinitives in verbal complements likewise take the accusative case as object:

- (18) nu=za pāit ^{URU}Alminan uetummanzi IŠBAT
 PTC REFL he.went Almina.ACC build.INF he.began
 'And then he began to build Almina' (KUB XIX 49 I 3–5)

There is no sign of Raising here as there is in Irish: since Hittite is a strict SOV language, the object of the infinitive always precedes it (17)–(18). When the object is a pronoun, it appears in normal clitic position, which is affixed to the sentence-initial particle.

Avestan also fits nicely into Stage II syntax. While purpose clauses continue the old Indo-Iranian pattern of marking purpose infinitives with datives, the objects are almost always accusative.

- (19) kaθā ašāi drujēm dyam zastayō . . .
 how Truth.DAT Lie.ACC I.would.place hand.LOC.DU
 ā iš dvāfšōng mazdā anāše aštaš-čā
 to them.ACC suffering.ACC wise.VOC bring.DAT.INF hostility.ACC=and
 'How would I place the Lie in the hand of Truth . . . to bring suffering
 and hostility to them, O Wise One?' (Y 44.14b,e)

Like Old Irish, Iranian raises the subject out of the infinitive clause, thus allowing the main clause verb to control its case marking; the infinitives which appear in these structures are never transitive: *stoi* 'be,' *gattōi* 'go.' Unlike Old Irish, however, Avestan only allows Raising after three verbs: *vas-* 'wish,' *man-* 'think,' and *mrav-* 'say.'

- (20) utayūitī tōvīsīm gāttōi vasēmī
 everlasting.ACC strength.ACC come.INF I.wish
 'I wish that everlasting strength would come' (Y 43.1c)

Even though the infinitive in Stage II is still paradigmatically nominal, it has a very different set of properties than does Stage I. Its accusative objects mark it as distinctly verbal. The fact that non-coreferent (i.e. independent) subjects also appear identifies these structures as even more clearly verbal. Subject Raising is, after all, universally associated with fully verbal nonfinite structures. Even though the infinitive is gaining verbal strength, it continues to occur side-by-side with the earlier Stage I verbal nouns.

1.4 Stage III: Acquiring Verbal Morphology

Once the infinitive is established syntactically, morphological changes may set in. It is not always the case, however, that the infinitive will be integrated morphologically into the verbal system: witness early Irish which continues highly nominal morphology in combination with more advanced syntax.

Indo-Iranian already shows distinct signs that the infinitives are acquiring verbal morphology. Vedic and Avestan infinitives in *-dhyai* (21) and *-dyāi* (22), respectively, have never had any nominal affiliation and are distinctly verbal; they appear in both structures and, when transitive, take accusative objects.

- (21) *tā vigrām dhaithe jaṭhāram pṛṇādhyai*
 YOU.NOM.DU strong.ACC take.IMP.2DU stomach.ACC fill.INF
 ‘You both take the strong one in order to fill your stomach’
 (RV VI.67.7a)

- (22) *aśavanəm te aśaonaṭ āfyeidyāi mraomi*
 truthful.ACC YOU.DAT truthful.ABL care.for.INF I.say
 ‘I say to you (that) a truthful man should be cared for by a truthful man’
 (Y 71.13 c,d)

Likewise, RV *-saṇi* (although historically a locative) is not associated with a nominal paradigm:

- (23) *vī no . . . pathás citana yáṣṭave*
 apart us path.ACC.PL perceive.IMP sacrifice.DAT.NMLZ
asmábhyam . . . víśvā áśās tarīsaṇi
 US.DAT all.ACC heaven.direction.ACC CROSS.INF
 ‘Find the path for us for sacrifice (NMLZ) / to sacrifice (INF), so that
 we may cross all directions of heaven’ (RV IV.37.7c,d)

An important point to note here is that infinitives with distinctive morphology continue to appear side-by-side with highly nominal forms, sometimes in the same passage. For instance, in Sanskrit, within one hymn, more than one infinitive type may appear. Example (23) has the Stage III infinitive, *tarīsaṇi* (with independent subject in dative case), appearing with Stage I *yáṣṭave*. Thus the advent of Stage III infinitives do not spell the end of Stage I and II. Furthermore, Old Irish preserves the old and new structures in complementary distribution: Stage I verb complements are uniformly accusative, while Stage II verb complements are prepositional.

1.5 Stage IV: Morphologically Unique Infinitives

The endpoint of Stage III is signaled by the arrival of a morphologically unique infinitive: one which is no longer synchronically nominally associated and which resides firmly in the verbal paradigm. Irish, of course, never advances toward a morphologically unique stage, keeping as it does both accusative and prepositional infinitives through Middle Irish. Modern Irish has lost the accusative variant, but continues to use a descendant of the prepositional verbal noun in nonfinite structures. Hittite and Avestan do not reach this stage in attested texts either. Classical Sanskrit, however, does have a single infinitive in *-tum*, which is uniquely identifiable as such. This accusative appears since the Vedic period in a variety of clause types; example (24) illustrates its use as a verb complement after *iṣ-* ‘wish,’ a typical Stage I:

- (24) *gātúm icchati*
 go.ACC.NMLZ he.wishes
 ‘He wishes to go’ (RV I.80.6d)

In (25) the same accusative form appears in a purpose clause, which qualifies it as a Stage II because it is not the usual case (i.e. dative) which one would expect in a purpose clause:

- (25) *sá á gamad índro . . . dātum dāmano*
 he.NOM to come.SBJV.3SG Indra.NOM give.ACC.NMLZ gift.GEN
rayiṅám
 wealth.GEN
 ‘May Indra come in order to give gifts (and) wealth’ (RV V.36.1b)

-tum began as a very minor infinitive type: it appears only six times in the RigVeda. Of the three accusative formations, it is second only to *-tim* in its scarcity. From these meager beginnings, *-tum* expands to become the standard infinitive form in Classical Sanskrit. The same result has been achieved in a number of other Indo-European languages: Baltic, Slavic, Germanic and Tocharian. For example, Baltic and Slavic both reconstruct to **-tim*, and Germanic to **-onom*. However, since the earliest attested stages of these languages already have a morphologically unique infinitive, any statements about their prehistory must be inferred from comparative evidence. If Indo-Iranian, Celtic, and Anatolian are to provide us with a model of infinitive development, we should be able to extrapolate from their histories to those of other languages. The details may differ but the overall outlines should look similar. The accusative **-onom* of Germanic, for instance, is not found in Indo-Iranian, Celtic or Anatolian,

but it is not farfetched to assume that, at some point in its development, it won out in competition with other nominalized verbal formations. After all, Vedic and Old Irish have a plethora of forms (3)–(4) above. Hittite, with its two infinitives, looks positively modern by comparison.

Thus when we see that the Slavic infinitive shares the same form as RV *-tim* and also an Irish verbal noun which developed from a **-ti-* stem, it should come as no surprise: there may have been more nominalized verbs in Proto-Slavic. In addition to the regular infinitive, Slavic and Latin (more about the latter in the following section) additionally have a supine form **-tum*, cognate with the Classical Sanskrit infinitive. The supine is simply a specialized form of purpose clause which has been relegated to use after verbs of motion. This supine is positive evidence for there having been more than one infinitive form in Proto-Slavic.

1.6 Stage V: Acquiring Tense and Voice

Latin and Greek, which together are unique among the Indo-European languages for having developed tense and voice marking on their infinitives, provide further evidence for the hypothesis that the infinitive in all Indo-European languages has developed out of multiple forms.

What Latin and Greek have done is take the various infinitive forms found in Stage I and II languages and specialize them according to tense, voice and verb stem type. For example, Greek uses *-ein* < **-esen*, an endingless locative, for thematic stems while *-nai*, which points to an *n*-stem, probably dative, is used for athematic stems. *-menai* in Lesbian is directly related to RV *-man-*, while *-men* in Homeric is the remnant of an endingless locative, not employed as an infinitive in Vedic. *-sai*, the dative of an *s*-stem, marks aorist (cf. RV *-se*). Middle voice has *-sthai*, which is often connected with RV *-dhyai*, although the phonological relationship is irregular.

Latin, on the other hand, does not maintain the inherited wealth of nominalized case endings: it has active *-re/se* and passive *-ri*, the dative and locative, respectively, of an *s*-stem; its supine points to *-tum*. However, Latin does head off in a modern, periphrastic direction with its other infinitive forms, e.g., the future active *-tūrum esse*, future passive *-tum irī*.

The behavior of Latin infinitives is typologically parallel to English, once its infinitive is unambiguously marked by *to*: any auxiliary can be added, giving it aspect, voice and even tense: *to be going*, *to have gone*, *to be eaten*. While *have* is historically a marker of perfect aspect, in Contemporary English it also carries a past time reference. Furthermore, future time may even be signaled with a quasi-modal, *to be about to go*, since the older modals no longer have infinitive forms (i.e. **to will go*).

While Greek has maintained the old synthetic, paradigmatic complexity of Indo-European, Latin and English have evolved in an analytic (periphrastic) direction. Regardless of the morphological type each of these languages becomes, they maintain a morphologically unique infinitive which is confirmed by their infinitival syntax:

- they undergo Raising;
- they re-nominalize their infinitives, by the addition of an article, as in Greek (26) or by using the infinitive form by itself as a noun, as in late Latin (27) and English (among other contemporary languages), regardless of what the long-past case marking of the infinitive was.

(26) *deísas tò zēn*
 fearing the live: INF
 'Fearing to live'

(27) *errare humanum est*
 err.INF human it.is
 'To err is human'

1.7 Conclusions

The evolution of the formal category of infinitive from a nominalization to a full member of verbal paradigms illustrates two principles of language change very nicely.

The first of them is that when new constructions arise, they typically coexist alongside the old, sometimes for centuries. One does not find one structure introduced and immediately replacing another. However, it is often easy to see that such structures are in complementary distribution, as in the case of early Irish. Even Vedic Sanskrit, with its multitude of forms coexisting side-by-side, illustrates this: it is not a chaotic mess, as one might think at first, but rather many historical strata manipulated by virtuoso Indic poets.

The second principle of language change is that the shift to new category status is not seen immediately in the morphology. Rather, new constructions are first evidenced more subtly—in the syntax—and only later marked overtly in the morphology (cf. Disterheft, 1987; Haspelmath forthcoming). Thus the transition from Stage I to Stage II is a very subtle one. In Irish, it has been overlooked in the past because philologists did not understand that the canonization of different case marking of verb complements (i.e. accusative versus prepositional) indicated a syntactic shift. Thus, we must be careful to distinguish morphological marking from syntactic properties. Because a language has no

infinitive category, we must not infer that it has no infinitive syntax. Morphology is notoriously conservative and sometimes maintains old forms for hundreds of years, whereas syntax is capable of changing much more rapidly.

2. Finite Subordination

2.1 Introduction

While infinitives develop from more noun-like to more verb-like categories, finite subordinates proceed the other way round, i.e. from more verbal and clausal constructions to nominalizations. We will discuss two aspects of this change. First, we will analyze the progressive loss of intonational and morpho-syntactic features that are typical of independent sentences (§2.2). Second, we will see how this loss does not equally affect all types of clausal relations, as some types of subordinates are more prone than others to be represented by deranked constructions (section 2.3).

2.2 From Independent to Dependent Sentences

A rich body of evidence suggests that finite subordination develops from paratactic constructions (cf. Bossong 1979, Givón 1979, Lehmann 1988, etc.). Bossong (1979), for example, who conducted the first study in the typological research tradition, observes a diachronic change from implicit subordination, where the semantic relationship between two clauses must be inferred from the context, to explicit subordination. In the latter, a specific semantic relation is indicated by word order or by the use of a certain particle or conjunction. Here we focus on three basic manifestations of the development towards finite subordination, such as the establishment of a unitary intonational contour (section 2.2.1), of embedding (section 2.2.2) and of a concordance of tenses or moods between main and subordinate clauses (section 2.2.3).

2.2.1 From Separate to Unitary Intonational Contour

The first stage towards finite subordination occurs when two adjacent sentences are pronounced under the same intonational contour. Both sentences have their own arguments and both verbs present a full array of tense, aspect or modality markers. From a purely morpho-syntactic point of view, therefore, it may seem that we are dealing with two independent constructions. However, the presence of an overarching intonation indicates that the two sentences are mutually related. This change is difficult to observe in the early stages of a language for which only written documentation survives, since writing is only an imperfect

approximation of oral pronunciation. In the Indo-European domain, such a change may be especially identified in Vedic.

Vedic religious texts offer very detailed phonological information, as if a prayer to the gods may be successful only if uttered without the slightest mistake in prosody. In Vedic the finite verb is toneless in the main clause and accented in the subordinate. The atonal nature of the main verb is probably due to the fact that the verb is typically placed at the end of the clause, a position which is associated with a decreasing intonation with respect to the clause incipit. The accentuation of the subordinate verb indicates on the one hand that the subordinate clause is pronounced within the same intonation as the main clause, and on the other that the linkage between subordinate and main clause has a rising-falling intonation. The subordinate typically precedes the main clause, and therefore the main clause occupies the same final position—with the same phonological correlates of low intonation—as the main verb in the simple clause (cf. Lehmann 1974, Klein 1992, Lühr 2008).

Verbal accentuation in Vedic is regularly found not only in explicit subordination (i.e. in clauses introduced by a relative pronoun or a conjunction derived from the stem of the relative pronoun) but also in implicit subordination, when no morpho-syntactic marker is used for clause linkage, as in (28).

- (28) *br̥haspátir bhinád ádrim vidád gāḥ /*
Br̥haspati.NOM split rock.ACC.SG found COW.ACC.PL
sám usr̥iyābhir vāvaśanta nāraḥ
together COW.INS.PL bellowed man.NOM.PL
 '(When) Br̥haspati split the rock (and) found the cows, the
 men bellowed together with the cows' (RV 1.62.3cd; translated by Klein
 1992: 67)

The accented verbs *bhinád* 'he split' and *vidád* 'he found' in the first sentence precede the atonal verb *vāvaśanta* 'they bellowed' in the second sentence. Despite the absence of an explicit subordinator, the two sentences are connected by a temporal or causal relationship: first Br̥haspati released the imprisoned cows, which symbolize the hidden water in the Vedic imagery, then the men rejoiced. The raised intonation of the first verb indicates that the sentence is not finished, and that another clause, the main one, will follow.

2.2.2 From Adjunction to Embedding

The phonological change from separate to unitary intonation has a syntactic parallel in the development from adjoined to embedded sentences. In the earliest texts of the Indo-European languages, the most ancient form of explicit subordination may be identified in the so-called 'correlative diptych' (Minard 1936, Haudry 1973, Justus 1976), where the complex sentence is clearly split

into two clauses, i.e. the (usually preposed) subordinate and the (usually postposed) main clause, and the main clause resumes the whole content of the subordinate or a single participant of it by means of lexical or pronominal structures. The correlative diptych is regular, for example, in Hittite, as illustrated in (29).

- (29) ^{GIS}TUKUL-ma kuin apíya harkun n-an hališšīyanun
 weapon=but which there I.carried CONN=him.ACC I.plated
 'But which weapon I carried there, that I had plated' (KUB I 1+II)

The subordinate is explicitly marked by the relative pronoun *kuiš* and contains the head noun ^{GIS}TUKUL 'weapon.' The head noun is resumed in the main clause by the accusative enclitic pronoun *-an* leaning on the sentence initial connective *nu*, which regularly signals a loose clause linkage implying asymmetric coordination or the beginning of a new clause (cf. Luraghi 1990a:47), and here underlines the separation between main clause and subordinate. This is a type of adjoined subordination: the relative construction, i.e. the construction consisting of the head noun and of the relative clause, is not equivalent to a noun phrase, but rather is a clausal constituent, which forms an endocentric construction with the main clause (cf. Lehmann 1988).

The bipartite structure of the correlative subordinates may be maintained for centuries; for example, it is found in all diachronic levels of Old Hittite, Middle Hittite and New Hittite, as well as in all records from Vedic to the Neo-Indian languages. Alternatively, the loose linkage of correlative subordinates may evolve into more integrated constructions characterized by embedding, when the subordinate represents a constituent of the main clause, without any resumptive strategy. Examples of embedded structures may be seen in (30), which represents the natural translations of example (29) into English, German and Italian.

- (30) a. I had plated the weapon which I carried there.
 b. Ich liess die Waffe (mit Edelmetall) einfassen, die ich dabei geführt hatte.
 c. Avevo fatto placcare l'arma che portai là.

Although a development from adjoined to embedded structures is not predictable, it is appropriate to state that, *if* syntactic strategies of subordination change, *then* they will proceed from adjoining to embedding and not the other way round. Such unidirectionality is a manifestation of grammaticalization, in this case of syntacticization (cf. Hopper and Traugott 1993:167). The intermediate stage implies indeterminacy, when the same syntactic construction allows an interpretation as both adjoined and embedded clause, according to whether a certain pronominal element is analyzed as either an anaphoric or

a subordinating marker. This stage is especially evident in the Germanic languages, where relative pronouns and (some) subordinating conjunctions are drawn from the stem of the Indo-European demonstrative pronoun **só-/tó-* ‘this.’ Consider example (31) from Gothic.

- (31) gatauhun ina du Annin frumist sa was auk swaihra Kajafin
 they.led him to Hanna foremost he was also father-in-law Kajafas
 ‘They led him to Hanna, he was also the father-in-law of Kajafas’
 ‘They led him to Hanna, who was also the father-in-law of Kajafas’
 (Jn 18.13)

The development of the relative pronoun is still in progress in Gothic. Besides the unambiguous relative pronoun *sa-ei*, where the demonstrative is augmented with the particle *ei*, we have the simple *sa*, which may be interpreted as either a demonstrative or a relative pronoun, as indicated in (31). This passage is quoted by Mossé (1942: 179) to illustrate the observation that ‘dans certains cas, même pour le demonstrative simple *sa*, on peut hésiter sur l’interprétation,’ since this pronoun has a function ‘très proche du relative.’

2.2.3 Development of *consecutio temporum vel modorum*

The relationship of dependence between main and subordinate clause may also be indicated by morphological devices, when the inflectional possibilities of the subordinate verb are constrained either by a certain subordinating conjunction or by the tense or mood of the main clause. Among the early IE languages this phenomenon is especially evident in Ancient Greek and in Latin, where it has traditionally been called *consecutio temporum vel modorum* ‘concordance of tenses or moods’; particularly, we have a *consecutio temporum* in Latin and a *consecutio modorum* in Ancient Greek, with the use of the ‘oblique optative.’ In Latin, when the verb of the main clause is inflected in a primary tense, i.e. in the present or future indicative, the verb of the subordinate clause must be inflected in the present subjunctive (32a), in the perfect subjunctive (32b) or in a periphrastic construction (consisting of the future participle and the present subjunctive of the verb *sum* ‘to be’) (32c), according to whether the situation denoted by the subordinate is contemporary, prior or posterior to the main clause situation.

- (32a) dico quid faciat
 ‘I say (PRS.IND) what s/he does (PRS.SBJV)’
 (32b) dico quid fecerit
 ‘I say (PRS.IND) what s/he did (PRF.SBJV)’
 (32c) dico quid facturus sit
 ‘I say (PRS.IND) what s/he will do (PERIPHRASTIC)’

Instead, when the verb of the main clause is inflected in a secondary tense, i.e. in the imperfect, perfect or pluperfect indicative, the verb of the subordinate clause must be inflected in the imperfect subjunctive (33a), in the pluperfect subjunctive (33b) or in a periphrastic construction (consisting of the future participle and the imperfect subjunctive of the verb *sum* 'to be') (33c).

(33a) dixi quid faceret

'I said (PRF.IND) what s/he did (IPF.SBJV)'

(33b) dixi quid fecisset

'I said (PRF.IND) what s/he had done (PPRF.SBJV)'

(33c) dixi quid factururus esset

'I said (PRF.IND) what s/he would have done (PERIPHRASTIC)'

The spread of the *consecutio* in Latin is supported by its persistent use in the Romance languages. Except for the periphrastic construction, the system of subordination and of the subjunctive mood is faithfully maintained in Italian, cf. (34)–(35). We illustrate the *consecutio* in Italian with the verb *pensare* 'to think,' rather than with the verb *dire* 'to say,' since predicates expressing certainty such as *dire* require the indicative in Italian subordination.

(34) a. penso che vada

'I think (PRS.IND) that s/he goes (PRS.SBJV)'

b. penso che sia andato

'I think (PRS.IND) that s/he went (PRF.SUBJ)'

(35) a. pensai che andasse

'I thought (PRF.IND) that s/he went (IPF.SBJV)'

b. pensai che fosse andato

'I thought (PRF.IND) that s/he had gone (PPRF.SBJV)'

Although not all Romance languages and dialects equally maintain the *consecutio*, they strikingly differ from the Germanic languages, where this phenomenon is much less common and almost nonexistent in the spoken varieties.

2.3 Different Spread of Subordinating Features

2.3.1 Spread of Subordinating Features to Different Languages

The analyzed changes from separate to unitary intonation, from adjoining to embedding, and from unconstrained to constrained tenses reveal the same phenomenon of increasing shared information between main clause and subordinate and of increasing 'relationality' of the subordinate with respect to the main clause. That is, a clause does not refer to a situation per se, featuring its

own participants, spatiotemporal coordinates and illocution, but offers a relational image of a situation, which can be fully interpreted only when related to certain semantic components of the main clause. In particular, the form of unitary intonation has the function of expressing a relational illocutionary force, i.e., the subordinate presents the same assertion, question, command, exclamation, etc. as the main clause. The form of consecutio has the function of expressing a relational time reference. The form of embedding has the function of expressing a relational participant.

These changes, however, are subject to considerable variation depending on different languages. It seems that the most common strategies for signaling subordination are—in this order—the phonological property of a unitary intonation, the syntactic properties of embedding and the morphological property of consecutio. Such distribution may be due to the fact that intonation represents the most transparent strategy to convey pragmatic functions, and that syntax is more transparent than morphology. Opaque forms are more idiosyncratic or cross-linguistically less widespread.

Among the early Indo-European languages, Ancient Greek and especially Latin present a highly developed system of finite subordination, with embedding and consecutio. Naturally, a distinction should be made among different authors and genres, since the consecutio is not always respected in popular or unofficial writings. Even Cicero, whose elaborate *modus dicendi* is largely responsible for the complex organization of the sentence in the literary languages of the Romance domain, does not always abide by consecutio in the letters to his intimates. However, a remarkable difference may be noticed between a text in Latin or Ancient Greek on the one hand and a text in Hittite or Indo-Iranian on the other, since the latter languages make extensive use of adjoining by means of correlative elements, without any obligatory temporal or modal predetermination of the subordinate verb. The Germanic, Baltic, and Slavic languages, as well as Classical Armenian, are positioned somewhere in the middle of the two extremes – Latin and Hittite – since they often attest embedded constructions, but do not have a productive system of consecutio. Latin and Ancient Greek consecutio is probably related to the spread of oratory or rhetoric in these languages. The art of persuading in judiciary and politic discourse needs an attentive manipulation of backgrounded and foregrounded information, as well as a careful distinction among more or less reliable sources and among more and less subjective viewpoints. Such exigency is less cogent in narrative texts.²

2.3.2 Spread of Subordinating Features to Different Constructions

2.3.2.1 Association between Explicit Subordination and Relative Clauses

The use of an explicit subordinating conjunction is especially found for relative clauses, followed—in this order—by adverbial clauses and by complete

clauses. In Indo-Iranian, Ancient Greek and Slavic, adverbial subordinators are mainly based on the stem of the relative pronoun **yó-*. In Hittite, Latin, Baltic and Classical Armenian they are based on the stem of the relative pronoun **kwí-/kwó-*, while in the Germanic languages they are based on the stem of the relative pronoun *só-/tó-*. These pronouns have different origins (**kwí-/kwó-* was an interrogative-indefinite pronoun, while **yó-* and *só-/tó-* were two different demonstrative-anaphoric pronouns), but they travel along the same diachronic path from relative to adverbial markers. The relative origin of adverbial subordinators is especially evident in Old Irish, where adverbial clauses are usually expressed by means of relative clauses dependent on a generic noun such as *tan* 'time,' *airm* 'place,' *indas* 'manner,' etc. For example, in the temporal subordinate *a laithe mbeires in claideb* 'when he carries the sword' (lit. 'the day in which he carries the sword'), the relative formation *-es* (*m-beir-es*, with nasalization) is attached to a generic noun such as *laithe* 'day.'

It seems that completive relations are the last to which explicit markers of finite subordination may be applied. If a relative construction is used for completive clauses, it is also used for at least some adverbial clauses, but not the other way round, owing to the fact that completive clauses are often represented by either nonfinite verbal forms or coordinate constructions. The function of objective completive clauses dependent on utterance predicates is usually expressed by direct speech, both typologically (cf. Cristofaro 2005) and in the Indo-European domain. The scarce syntactic integration between the clause containing the utterance predicate and the clause expressing the reported speech can also be seen in cases of hybrid structures between direct and indirect discourse, when a clause is introduced by a subordinating conjunction as in typical indirect discourse, but does not present any shift in person or deictic elements as in typical direct speech. An example of this would be a sentence such as *He_i told me that I_i went to the city* where the third person subject of the main clause is coreferential with the first person subject of the subordinate. Such hybrid structures of reported speech are absent from Standard Average European, but are found, for example, in Indo-Aryan. Here they may have been favored by the Dravidian substratum, where this phenomenon is very common. Hybrid structures of reported speech are also found in other Indo-European languages, such as Classical Armenian. Cf. (36).

- (36) *bołok'ē_i et'e č'-em_i aržani paštaw-n arnloj*
 he.states that NEG=L.am worthy.NOM.SG worship.INS.SG-that receive.INF.GEN
 'He_i states that he_i wasn't worthy of receiving that worship' (lit. 'He_i
 states that I_i'm not worthy of receiving that worship,' Eznik 1.3)

We may observe on the one hand the typical subordinator *et'e* 'that' and on the other a relationship of coreferentiality between the third person subject of

the main clause and the subject of the subordinate clause. The latter is a first person: in the form *č'em* the proclitic form of declarative negation *oč'* leans on the first person of the indicative present of the verb 'to be.' The same phenomenon is also found, albeit to a lesser degree, in Ancient Greek after Homer, in the so-called use of the '*hóti recitativum*' (cf. Goodwin 1889: 285). The lack of shift in person or deictic elements is a manifestation of a loose clause linkage; the appearance of this phenomenon even in completives of languages with a developed system of subordination such as Ancient Greek and Classical Armenian indicates the delay of completive relations to be integrated into a condensed, syntacticized hypotaxis.

2.3.2.2 Association between Embedding and Adverbial Clauses

Adjoined structures seem to be preferred over embedded structures when representing relative clauses and primary adverbial clauses, i.e. adverbial clauses expressing time, place, manner (for which cf. Thompson and Longacre 1985: 177). As we have seen in the case of Old Irish above, the boundary between primary adverbial clauses and relative clauses is not strict, since primary adverbial clauses may be replaced by relative clauses with generic head nouns such as *time*, *place*, *manner*. Instead, secondary adverbial clauses, i.e. adverbial clauses for which this kind of replacement is not possible, favor embedded constructions. Conditional clauses and causal clauses usually do not have any resumptive element even in languages such as Vedic where adjoining is very common. Conversely, relative clauses and primary adverbial clauses may reveal lexical or pronominal resumption even in languages such as Ancient Greek (37) and Latin (38) where embedding is overwhelmingly more used than correlation.

(37) **hós** ke theoís epipeíthētai mála t' ékluon **autoú**
 who.NOM PTC god.DAT.PL obeys especially PTC they.listen him.GEN
 'Who obeys to the gods, they especially listen to him' (Il. 1.218)

(38) **loci** natura erat haec, **quem** **locum** nostri
 place.GEN nature.NOM was this which.ACC place.ACC our.men
 castris delegerant
 camp.DAT.PL had.chosen
 'The nature of the place was this, which place our men had chosen for the camp' (Caes. B.G. 2.18)

It may be argued that relative clauses diachronically resist the longest to the extension of a tight clause linkage since they clearly manifest the so-called principle of 'one chunk of information at a time' (Du Bois 1987, Chafe 1994) or of 'separation of reference and role' (Lambrecht 1994: 185), whereby first a certain

noun phrase is presented, and then something is predicated about it. It is uncommon for natural discourse to introduce a referent and to talk about it in the same clause. This principle may also be applied to primary adverbial clauses, for which a generic noun phrase of time, location or manner is implied, but not to secondary adverbial clauses. Conditional or causal clauses do not have a referential function, but rather express more abstract relations or circumstances. Owing to their nonindependent referential properties, these adverbial clauses lose their syntactic independence quite early with respect to the main clause.

2.3.2.3 *Association between Consecutio and Completive Clauses*

While explicit subordination starts from relative clauses, and embedding starts from (certain) adverbial clauses, *consecutio* seems to originate from completive clauses. Even in Ancient Greek and Latin, where *consecutio* is widespread, a concordance of tenses or moods is not usual for relative clauses and for certain adverbial clauses such as conditionals and consecutives. Instead, purposive clauses in both languages rigorously respect *consecutio*. Consecutive and purposive clauses represent similar semantic relations, in that they refer to a situation which occurs at a later period compared with the situation of the main clause. However, consecutive clauses represent this posterior event as an objective consequence of a prior event, while purposive clauses portray this situation more subjectively, as a wish or intent. This corroborates the regular use of the *consecutio* with completive clauses expressing reported speech (32)–(33), indirect interrogatives, etc. since the very function of indirect speech is conditioned by subjective or context-dependent components such as modality, point of view, genre, etc. If, however, a Latin or Greek author wishes to report a discourse in a more detached or objective fashion, the *consecutio* may be neglected even in the domain of complementation. This may be especially seen in the change from Latin to Romance. As anticipated, Latin uses the subjunctive for utterance predicates such as *dico* 'say' as well as for propositional attitude predicates such as *puto* 'think,' while Romance languages tend to use the indicative for utterance predicates. The loss of *consecutio* starts from predicates implying a lesser degree of subjectivity, i.e., predicates showing to a lesser extent the function for which *consecutio* was employed to begin with.

2.4 Conclusions

We have seen that the evolution from parataxis to finite subordination is not a homogeneous process, but rather presents multiple paths of diachronic change according to different languages and to different constructions of the same language. In the Indo-European domain, the languages which possess a more developed system of finite subordination, with embedding and *consecutio*, are Latin and Ancient Greek, i.e., the same languages which in section 1 have been

shown to have also the most developed system of infinitives. By contrast, languages such as Vedic and Hittite, which retain nominalized infinitives, also have a scarcely syntacticized finite subordination, with separate intonation, adjoining and lack of consecutio. This suggests a parallel development of finite and nonfinite subordination, despite their different sources.

Notes

1. The first part of this chapter, devoted to non-finite subordination (section 1), was written by Dorothy Disterheft. The second part, devoted to finite subordination (section 2), was written by Carlotta Viti. The authors express their gratitude for comments to Silvia Luraghi and Vit Bubenik.
2. It must be observed that Latin is not the only language that presents a verbal inflectional category—the subjunctive—that is specialized for (although not exclusive of) subordination. Old Irish, for example, has special verbal forms for signalling a relative interpretation: with respect to the main clause *celid in fer in claideb* ‘the man hides the sword,’ for example, the subject or the object may be relativized by replacing the indicative ending *-id* (*cel-id*) with the relative ending *-es* (*chel-es*, with lenition): *in fer cheles in claideb* ‘the man who hides the sword,’ *in claideb cheles in fer* ‘the sword the man hides.’ This, however, is quite different from the subtle correspondence of tenses and moods of Latin according to the conjunction and to the verb of the main clause.

14 Alignment¹

Geoffrey Haig

Chapter Overview

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1. Alignment: Definitions

The term ‘alignment’ is used here as a cover term for the different ways in which the core arguments of basic transitive and intransitive clauses are treated in the grammar of a particular language. Following common practice, I adopt the following terminology to refer to the core arguments concerned:

- S = Subject of an intransitive verb
- A = The subject of a transitive verb, semantically denoting the actual or potential controller of the event concerned
- P = The direct object of a transitive verb, semantically less controlling than A

The categories S, A and P are in fact problematic, because they are derivative of the concepts of core argument and transitivity, both of which require more rigorous definitions than can be provided here (see Haig (2009) and Qeixalós and Gildea (in press) for recent discussion). However, for the current descriptive purposes, reference to S, A and P remains indispensable, and I will simply accept as given the notions of transitive and intransitive, and core argument.

As mentioned, alignment is concerned with the different ways in which S, A and P are treated in the grammar, whereby ‘treated’ refers to three domains

(cf. Donohue 2008: 27): (a) case marking of the NPs concerned; (b) agreement patterns triggered by these NPs on, e.g., the governing verb; (c) the respective positions of the NP in the clause. These, then, are the primary diagnostics in determining the alignment of a particular construction in a particular language. It needs to be stressed that a particular alignment is seldom—if ever—characteristic of an entire language. Instead one finds in one and the same language different grammatical subsystems exhibiting different alignments. Typically we find, e.g., the case-marking associated with verbs in one tense may differ from that associated with verbs in another. Or the alignment of case marking on pronouns may differ from that found with nouns etc. It is therefore an oversimplification to speak, e.g., of an ‘ergative language’; it is in fact specific constructions that are characterized by different alignments, not entire languages. The majority of the world’s languages exhibit one (or more) of the types of alignments described in the following sections.

1.1 Accusative Alignment

S and A are treated alike in terms of case marking and agreement rules, while P is treated differently. This is illustrated with examples from Turkish:

S
 (1) *Ben ev-e git-ti-m*
 1SG house.DAT go.PST.1SG
 ‘I went home’

A P
 (2) *Ben Sevgi-yi gör-dü-m*
 1SG Sevgi.ACC see.PST.1SG
 ‘I saw Sevgi.’

A P
 (3) *Sevgi ben-i gör-dü*
 Sevgi 1sg.ACC see.PST(3SG)
 ‘Sevgi saw me.’

As far as case marking is concerned, it is P that is singled out for special treatment (here the accusative marker *-(y)i*), while S and A remain typically unmarked. Agreement with the verb, however, is consistently and exclusively with S and A, while P is ignored.

1.2 Ergative Alignment

Ergative alignment is characterized by a reversal of the treatment of A and P: P and S are treated alike, while A is treated differently. This is illustrated with an example from Kuikúro (southern Cariban, Brazil; Gildea 1998: 167):

- S
 (4) *hǎré té-lǎ*
 arrow go.PUNCT
 'The arrow goes'
- P A
 (5) *hǎré té-lǎ i-héke*
 arrow go-PUNCT 3S.ERG
 'He made the arrow go / shot the arrow'

Although the verb in these two examples is phonologically identical, like many labile English verbs (e.g. *cook, break, walk*) it may have an intransitive reading, as in (4), or a transitive reading (5). The S and the P both occupy clause-initial position, and are morphologically unmarked, while the A takes the ergative marker *-héke* and occurs post-verbally (though different positions of the A are also possible in this language).

1.3 Active/Stative (Also Known as Split or Fluid-S, or Semantic Alignment)

This alignment is the most controversial (see, e.g. Wichmann (2008) or Donohue (2008) for recent discussion), and the least widespread in the languages of the world (cf. Comrie (2008) and Siewierska (2008) for figures). On the definition of Dixon (1994), active alignment refers to the situation where some members of the S-category are treated like an A, while others are treated like a P. If each intransitive verb in the language treats its S invariably as either A or P (i.e. each verb is associated with one, and only one case frame), then the language is said to be 'split-S.' If, on the other hand, the S of a given intransitive verb is sometimes treated like an A, and sometimes like a P depending on contextual semantics of a particular clause (e.g. degree of volitionality or affectedness implied), then the system is 'fluid-S.' The classic case of the latter is said to be Bats (Nakh-Dagestanian; Arkadiev 2008: 107):

- (6) a. *as wože* b. *so wože*
 1SG.ERG fell 1SG.NOM fell
 'I fell (on purpose)' 'I fell (accidentally)'

Active alignment systems, of whatever shape, pose serious difficulties for the typology of alignment, and indeed, some scholars suggest that active alignment is not a clearly definable type in its own right at all (Nichols 2008). There are several reasons for the uncertain status of active alignment within the typology of alignment systems. First, the very existence of languages with inconsistent S-categories casts doubt on the universality of S, A and P. Secondly, the semantically motivated variant marking of S is often not restricted to intransitive verbs, but extends to the marking of transitive subjects as well, e.g. in Central Pomo (Pomoan, California, cf. Mithun 2008: 306). Finally, semantically determined variation in the case marking of S often occurs in connection with noncanonical, or ‘quirky’ (or dative) subjects, as in Icelandic or Hindi. Distinguishing this kind of variant case marking from active alignment is not a straightforward matter, and indeed there are obvious and telling parallels across the two (see Donohue 2008). For these reasons, I will not be dealing with the diachronics of active alignments here; see among others Barðdal and Eythórsson (2009) for Indo-European, and Malchukov (2008) for a typological perspective on the mechanisms by which active alignments may develop.

2. Alignment Change

Although alignment is considered by Nichols (1992) to be a relatively stable aspect of a grammar, over an extended period of time, the alignments found in a particular language may change. We know, e.g., that the Iranian and the Indo-Aryan languages developed ergative alignment in their past tenses, which subsequently switched back to accusative alignment in some of those languages. Ergative alignment may move towards an active alignment (Western Basque, Aldai 2008), and so on. The literature on alignment change is vast, and rapidly expanding, and it is not possible to do it justice here. In what follows, I will be presenting data from one fairly well-documented case of alignment change, that of the Iranian languages, involving a shift from accusative to ergative and back to accusative, before discussing some more general aspects of alignment change in section 3 below. Most of the data stems from the extensive discussion in Haig (2008).

2.1 Accusative to Ergative: The Case of West Iranian

Iranian is a branch of Indo-European, genetically most closely linked to the Indo-Aryan branch. The oldest attestation of the Iranian languages are the Old Avesta, a collection of religious texts considered to represent an Old Iranian language, Avestan, spoken perhaps more than 3,000 years ago. A second, more

precisely datable body of texts are the Old Persian inscriptions, dating from approximately 2,500 years ago. Old Persian is, as the name suggests, a direct ancestor of Modern Persian. Middle Persian texts are attested from around the first century AD, with reasonably continuous attestation ever since. Persian thus offers an excellent opportunity for tracing syntactic change over a period of more than two millennia.

From our knowledge of Old Avestan, it is quite evident that Old Iranian had straightforward accusative alignment in all tenses. Two examples from Old Avestan (Yasna 29,6) will suffice to show the Nominative case of the A and the Accusative of the P (7a) and the Nominative of the S (7b):

- (7) a. *aṭ zī Өwā fšuyantaē=cā vāstrāi=cā*
 and indeed 2SG.ACC(P) cattle.breeder.DAT=and herdsman.DAT=and
Өwōrašta tatašā
 Fashioner.NOM(A) has-created
 ‘And indeed the Fashioner(A) has created you(P) for the benefit of
 the cattle-breeder and the herdsman.’

- (7) b. *zəməda uzuxšieinti uruuarā*
 earth.ABL grow.3PL plant.NOM:PL(S)
 ‘Plants(S) grow up all over the earth’ (Skjærvø 2003: 146)

Likewise in Old Persian, all clauses based on finite full verbs exhibited accusative alignment in all tenses:

- (8) *pasāva adam(A) kāram(P) frāišayam Bābirum*
 thereupon 1SG.NOM army.ACC send.PST.1SG to.Babylon
 ‘Thereupon I(A) sent an army(P) to Babylon’ (Kent 1953, DB III,84)

- (9) *yaӨā Dārayavahauš(S) xšāyaӨiyā abava*
 When Darius.NOM king become.PST.3SG
 ‘When Darius(S) became king’ (Kent 1953, XPf, 25–26)

However, in addition to clauses with finite forms of past-tense verbs, Old Persian also exhibited the so-called *manā kartam* construction, abbreviated here as **m. k. construction**. The predicate of the m.k. construction was a resultative participle, rather than a finite verb form, and the A (if present at all) took the Genitive. An example is the following:

- (10) *ima tya manā kartam pasāva yaӨā xšāyaӨiya abavam*
 that which 1SG.GEN do.PTCP after when king become.PST.1SG

'This (is) that (which) **was done by me** after (I) became king' (Kent 1953, DB I,28–29)

This particular phrase, with minor variations, is repeated in the Old Persian texts at least twenty times, suggesting a strongly formulaic character.² The constitutive elements of the m.k. construction are (a) the subject NP, in the nominative case (here the 'relative article' *tya*, Nominative Neuter Singular), (b) an NP in the Genitive case expressing an Agent (here *manā* 'first person singular Genitive') and (c) the resultative participle in *-ta*, here *kartam*, from *kar* 'do, make,' carrying Nominative Singular Neuter inflection in agreement with *tya*. Optionally, the participle may be extended with a form of the copula verb *bav-*, as in (11) below.

As far as the case of the A is concerned, the label 'Genitive' refers to the etymology of the marker itself, which goes back to the Old Iranian Genitive. But in Old Persian, the Genitive marker had absorbed the functions formerly carried by the old Dative, now lost entirely, so the most frequent functions of the Old Persian Genitive were actually those typical of a Dative case. Thus the label 'Genitive' is, from a functional perspective, somewhat misleading, but I will continue to use it here. A second possibility for expressing the A was through a clitic form of the Genitive pronoun, as in (11) and (12):

- (11) *utā=maiy aniyasçiy vasiy astiy kartam*
 and=1SG.GEN much else COP.PRES.3SG DO.PTCP
 'and much else was done **by me**' (Kent 1953, DB IV,46)

- (12) *avaΘā=šām hamaranam kartam*
 thus=3PL.GEN battle DO.PTCP
 'thus **by them** battle was done' (Kent 1953, DB III,18–19), cf. also
 DB III, 40, 47–48,63–64,68–69;DB II,27,42,47,56,98

Now in Old Persian, the m.k. construction was but one of several possibilities available to express propositions in the past tense. More widespread at that time was the use of various finite past-tense verb forms. Thus compare (10) above, with a participle as predicate and a Genitive A, with (13), where essentially the same proposition is expressed with a nominative A and a finite past-tense verb form:

- (13) *ima tya adam akunavam*
 this which 1s DO.PST.1SG
 'this is that (which) I did' (Kent 1953: DB IV,5–6)

Just which contextual factors (stylistic, register, subtle aspectual nuances?) triggered the choice of the m.k. construction over the finite verbs found in (13) cannot be stated with any degree of certainty. At present we must simply accept that in Old Persian, the m.k. construction was a syntactic variant available for expressing past-tense transitive clauses, alongside the still viable accusative construction based on a finite verb form.

In the transition from Old to Middle Persian, quite drastic changes occurred in the inflectional morphology. The original case system broke down completely, leaving NPs and pronouns lacking any case distinctions whatsoever (though the oldest Middle Persian and Parthian texts retained a two-way distinction on some pronouns and kinship terms). Parallel to these developments, the old finite past tenses of perfect and aorist likewise became defunct. The verbal system was thus reduced to a two-way distinction between forms based on the present tense stem of the verb, and those based on the old participle. What this meant is that to express propositions in the past tenses, the sole forms available were reflexes of the old resultative participles.

These changes to the inflectional morphology had radical consequences for the syntax. For the old resultative participles, like comparable participles in many languages, were essentially verbal adjectives, lacking the ability to govern both a subject and an object. To express a transitive proposition in the past tense thus meant utilizing a different kind of syntax to that which was available for the present tenses, where canonical finite verb forms were still available. And the construction that came to fill that need was the m.k. construction illustrated in (10)–(12) above.

In Middle Persian, as mentioned, the case distinctions had also disappeared. What was retained, however, was a set of ‘oblique’ clitic pronouns, etymologically the reflexes of the old Genitive clitic pronouns. And it was these pronouns that became the hallmark of the past transitive constructions of Middle Persian, and numerous modern West Iranian languages to this day. We have already seen them as markers of the A in (12) above, repeated here for convenience:

- (12) *ava*Θ*ā*=*šām* *hamaranam* *kartam*
thus=3PL.GEN battle do.PTCP
‘thus **by them** battle was done’

This construction became the standard means for expressing past transitive clauses throughout Middle Persian. An example from late Middle Persian (*ca.* 10 century) is the following:

- (14) *u*=*š* *ēn*=*iz* *guft*
and=3SG this=too say.PTCP
‘and (he) said this too’ (Williams 1990, 47.5) [Late Middle Persian]

Here the clitic pronoun (third-person singular) =š cross-references the A. In intransitive clauses, however, the S was never cross-referenced via a clitic pronoun. In this sense, then, the syntax of Middle Persian picks out the A for special treatment, distinguishing it from the S. Syntactically, (14) basically mirrors the Old Persian example (12). As in Old Persian, the use of the clitic pronoun was still optional, and could be omitted if a full NP or pronominal A was present in the clause:

- (15) *dēn* *īg* *man* *wizīd*
 religion which I choose.PTCP
 'the religion which I chose' [. . .]' (Boyce 1975:a,1)

Nevertheless, throughout Middle Persian the use of the pronominal clitic for cross-referencing the A with a past transitive verb form was extremely frequent, and in many modern languages, it is obligatory, regardless of the presence of a subject NP in the clause. Once the pronominal clitic had become obligatory for cross-referencing the A, it was no longer a pronoun, but a kind of clitic agreement. This is in fact precisely what is found in a large number of modern West Iranian languages, which continue to use erstwhile clitic pronouns for cross-referencing the A of a past transitive construction. Thus in Central (Sorani) Kurdish we have:

- (16) *min* *sag-aka=m* *kušt*
 1SG dog.DEF=1SG kill.PST.3SG
 'I killed the dog'

While the full pronoun *min* 'I' could be omitted from (16) without leading to ungrammaticality, the clitic pronoun =*m* cannot.

Over time, the Middle Persian system of past transitive constructions utilizing clitic pronouns to cross-reference the A was supplanted by a new one, involving the use of an innovated accusative marker, the clitic =*rā*. The following example shows the coexistence of the clitic-pronoun marking the A, and the innovated accusative marker =*rā* (transliterated with *r'* here):

- (17) *k=š* *'yn* *d'st'n* *r'* *bgft*
 when=3SG this story ACC tell.PST.IRR
 'when he told this story' [Early New Persian, Heston 1976: 94]

But towards Modern Persian, the use of the clitic pronoun cross-referencing the past-tense A was abandoned completely, while the innovated accusative marker =*rā* occurred with all (definite) Ps, regardless of tense. The Modern Persian version of (17) would be:

- (18) *vaqtike in dastān=rā goft*
 when this story=ACC say.PST.3SG

Thus Persian has gone full circle from consistent accusative alignment in Old Iranian, through a phase with a kind of ergativity in the past tenses (special marking of A through clitic pronouns), before finally reverting to full accusativity in Modern Persian. Of course before alignment in Persian returned to consistent accusative, the agreement system on the verb also had to undergo restructuring, with person agreement with S and A becoming the rule. These changes are quite complex and not fully understood, hence not treated here, but see Bubenik (1994) for discussion.

As mentioned, there were no case distinctions on nouns and pronouns in (later) Middle Persian, so it is debatable whether one can speak of an ergative system in the past tenses. However, in a number of related West Iranian languages, a two-way case distinction was preserved, e.g. in Northern Kurdish (also known as Kurmanji, Haig 1998), or Zazaki (Paul 1998). And in these languages, we find that the A of past transitive clauses consistently occurs in the Oblique case, while the P is in the unmarked case, generally termed the Direct in Iranian linguistics. The Oblique case is the etymological reflex of the Old Iranian Genitive, and it is quite evident that the modern ergative constructions in these languages represent a continuation of the Old Iranian m.k. construction discussed above. The verb (the reflex of the old participle) agrees with the P, sometimes in gender as well, although there is considerable cross-language and indeed inter-language variation in patterns of verbal agreement. Illustration of these facts comes from Northern Kurdish, which (in some varieties at least) has ergative alignment in past tenses:

- (19) *min tu dît-î*
 1SG.OBL 2sg see.PST.2SG
 'I(A) saw you(P).'

- (20) *te ez dît-im*
 2SG.OBL 1SG see.PST.1SG
 'You(A) saw me(P).'

- (21) *ez zarok bû-m*
 1SG child COP.PST.1SG
 'I(S) was (a) child.'

In these languages, then, we have ergativity both in case marking, and agreement on the verb. In the present tenses, however, alignment has remained quite unchanged from Old Iranian down to the present. Thus the changes that affected

alignment in Iranian languages are solely restricted to one specific syntactic environment: the morphosyntax associated with past transitive verb forms. Table 14.1 sums up the main alignment features of the Iranian languages discussed in this section.

Table 14.1 Alignment of case marking in selected West Iranian languages

	Present tenses	Finite Past (Aorist, Perfect)	Participial verb form
Old Persian	ACC (inherited Accusative case)	ACC (inherited Accusative case)	m.k. construction
Middle Persian	No overt case marking of P	Reflex of m.k. construction; A is cross-referenced via pronominal clitic	
New Persian	ACC (P marked with =rā)	ACC (P marked with =rā)	
Central Kurdish (No case marking)	No overt case marking of P	A obligatorily cross-referenced via pronominal clitic	
Northern Kurdish (two-way case system, Direct vs. Oblique)	ACC (S, A in Direct case, P takes Oblique case)	Ergative (A takes Oblique case, P Direct)	

2.2 On Explanations for the Emergence of Ergativity in Iranian

The following discussion represents a very condensed version of arguments set out in Chapters 3 and 4 of Haig (2008), to which the reader is referred for additional data. The driving force behind the emergence of ergative, or at least non-accusative, structures in the past tenses of Iranian languages are largely morphological in nature: the loss of the finite past tense forms, which led to the participles becoming the sole carriers of the meaning ‘past.’ But the question of just what mechanism led to the m.k. construction emerging as the sole means of expressing past transitive constructions is less easy to answer. Much depends on one’s interpretation of the nature of the m.k. construction itself. Basically, two positions are found in the literature: the m.k. construction is considered to be an agented-passive, or it is considered to be a noncanonical subject construction (e.g. an external possessor construction).

2.2.1 The Agented-Passive Interpretation

Traditionally, the m.k. construction has been interpreted as a passive (cf. Bynon 1979, Bynon 1980, Payne 1980, Cardona 1970, Statha-Halikas 1979, Skjærvø 1985, Bubenik 1989a, Harris and Campbell 1995: 243–244). Likewise, the origin of ergativity in closely related Indo-Aryan has also been linked to agented

passives (e.g. Bubenik 1998), so postulating a similar scenario for Iranian is obviously attractive. The most telling evidence in favor of a passive interpretation comes from the fact that constructions headed by participles in *-ta* also occur **without** any form of overt agent.³ Consider the following:

(22) *xšačam tya hacā amāxam taumāyā parābartam āha*
 kingdom which from our family taken.away.PTCP be.PST.3SG
 ‘the kingdom which **was taken away** from our family’ (Kent 1953, DB I, 61–62)

(23) *vasiy aniyašciy naibam kartam anā Pārsā*
 much other good do.PTCP in Persepolis
 ‘much other good (construction) **was built** in Persepolis’ (Kent 1953, XPa, 13–14)

(24) ... *tya bardiya avajata*
 ... that Smerdis slay.PTCP
 ‘... that Smerdis **had been slain**’ (Kent 1953, DB I,32)

In these constructions, the same participles (in *-ta*) occur as in the m.k. construction. Likewise, they occur with or without copula support (in (22) with copula *āha* ‘was,’ in (23) and (24) without the copula). Translationally, and structurally, they correspond closely to an English agentless passive, which is likewise based on a past participle. Agentless analytic passives with cognate participles are also solidly attested in Vedic and Avestan, as well as in other branches of Indo-European (Statha-Halikas 1979: 355–356). On the assumption that a construction such as (22) is indeed an analytic passive, then the most obvious interpretation of a m.k. construction such as (11) is that it is merely the agented version of such a passive. Viewed from this perspective, the m.k. construction is simply a straightforward participle-based passive, typical of many Indo-European languages, which has been extended by the addition of a (facultative) Agent-phrase.

Although the passive interpretation of the m.k. construction has obvious attractions, it also has three serious drawbacks. First, if one adheres to this view, then the following mechanisms must be assumed to have accompanied the development of the m.k. construction into the ergative construction of languages such as Northern Kurdish (cf. (19) above): the syntactically peripheral Agent-phrase must, over time, have acquired the syntactic properties associated with subjects, while the erstwhile patient must have lost its subject properties (cf. Haig (1998) for subject properties in the Kurdish ergative construction). Although such a development is certainly possible, it could be expected to have taken some time to work through, and to have left, somewhere in the extensive

attestation of Iranian languages, a trace. Yet although different Iranian languages have preserved many of the assumed stages of the development of ergativity, nowhere is a construction type reliably attested in which the P of the unmarked past transitive construction is still demonstrably a subject. This is perhaps the major drawback of the passive-to-ergative account of alignment change in Iranian.

A second drawback is that the passive account does not match up with the animacy and topicality features of the A-phrases in the attested Old Persian examples: they are almost exclusively pronominal with human reference (mostly first person), or in one case, a kinship term. Now cross-linguistically, it has been repeatedly demonstrated that a passive is typically used 'in contexts where the A is relatively low in topicality with respect to the P' (Payne 2003: 204). This observation is backed by extensive quantitative investigations (see, for example, the contributions in Givón 1993). Animacy likewise plays a role, with the passive typically occurring when the A is lower than the P in animacy. Indeed in some languages, a clause where the P outranks the A in animacy (e.g. a clause such as *the bee stung me*) must be put into the passive voice, e.g. in Southern Tiwa (Tanoan, Mexico and Arizona), discussed in Comrie (1989: 192). Connected to this issue is the phenomenon of Preferred Argument Structure (PAS), developed by Du Bois (1987) and since demonstrated for a large number of typologically diverse languages (see contributions in Du Bois et al. 2003). Du Bois observes that in natural discourse, the A role in an active transitive clause is overwhelmingly filled by a pronominal argument (and in languages which allow deletion of pronouns, often empty), rather than a full NP. He calls this tendency 'Avoid lexical A.' In contrast, the P role is the preferred one for introducing new, hence indefinite, full NPs.⁴

How does this relate to the m.k. construction? As mentioned, all the attested examples have an A which is either pronominal, or a kinship term in one instance. In other words, the A is highly topical, and highly animate. Now this is, as mentioned, precisely the distribution that would be expected in a basic transitive clause, where we expect the A to be high in animacy, and most commonly in fact pronominal. But it is exactly the opposite of what we expect to find in a passive clause. It seems therefore distinctly odd that Old Persian should have had a passive construction that was used, as far as the restricted corpus is concerned, exclusively in contexts typical of active transitive clauses. Now although the pragmatic features of passives sketched above are not grammatical constraints, but constraints operating at the level of statistical significance in discourse, they are certainly robust enough to warrant serious consideration. I conclude therefore that the animacy and topicality features of the m.k. construction strongly militate against a passive interpretation.

The final drawback of the agented-passive interpretation of the m.k. is the following: Most definitions of 'passive' assume it to be the marked value of a

voice opposition, contrasting with an unmarked 'active' voice. Now for the m.k. construction, built on the participle, it is difficult to say what the corresponding active voice would have been. If we assume that the participle was a specific tense form, then there simply was no corresponding active voice for that tense. Scholars of Iranian such as Lazard (1984: 242) have pointed to this fact, concluding that the m.k. construction was 'neither active nor passive' (my translation).

In sum, although the passive interpretation has much to recommend it, it faces three considerable conceptual and empirical problems, none of which has been convincingly refuted to date. In the following section, we will examine an alternative interpretation.

2.2.2 The Non-canonical Subject Interpretation

An alternative account of the m.k. construction, originally suggested by Benveniste (1952) and since developed by Trask (1979), Bynon (2005) and Haig (2008), is that it was not an agented passive, but a noncanonical subject construction. The crucial difference between such a construction, and the agented passive, is that the Genitive A is considered to be an argument of the entire construction, rather than a mere peripheral *by*-phrase equivalent. As such, it is assumed to already exhibit some of the properties typical of canonical subjects, in particular in terms of topicality and animacy, but possibly also in terms of control of certain syntactic processes. There are two potential problems with this account. The first is the optionality of the A: we have just seen that participial constructions could occur with or without an A. But optionality of A-arguments is actually a typologically widespread feature of ergative syntax, found e.g. in Samoan, or in Dyrbal (see Haig 2008 for discussion). Thus optionality alone cannot be used as evidence against argumenthood. The second problem is the difficulty of demonstrating unequivocally that the A controls syntactic subject properties. The difficulties here largely stem from the restricted and formulaic nature of the corpus, which render a sophisticated syntactic analysis rather difficult. However, there are certainly suggestive features (control of co-referential deletion) which make the assumption of subject properties at least a plausible option, although final proof is unlikely to be forthcoming.

Despite these undeniable drawbacks, the noncanonical subject interpretation of the m.k. construction nevertheless offers some significant advantages: First, it readily accounts for the high preponderance of pronominal As found in the m.k. construction (cf. discussion in the preceding section): Noncanonical subjects are typically high in animacy, and often pronominal.

Second, the use of dative A-phrases with nonfinite verb forms was widespread in Ancient Indo-European, as indeed was the use of datives to express Experiencers and Possessors in a number of constructions. Typical examples from Old Iranian are the following, with pronominal Experiencers and Benefactives:

- (25) *karāhyā naiy azdā abava*
 People.GEN NEG known be.PST.3SG
 'To the people it was not known' [Old Persian, Haig 2008]
- (26) *aniyahyā asam frānayam*
 rest.PL.GEN horses buy.PST.1SG
 'For the rest I bought horses' [Old Persian, Haig 2008]
- (27) *ada=taiy azdā bavātiy*
 then=2SG.GEN known be.PRES.3SG
 'Then it is known to you' [Old Persian, Haig 2008]
- (28) *nōit=mōi vāsta xšmaṭ anyō*
 NEG=1SG.DAT herdsman 2SG.ABL other
 '(There is) no other herdsman for me than you' [Old Avestan, Haig 2008]

Thus the m.k. construction drew on a solid Indo-European heritage, and the extension of an Experiencer/Possessor reading to an Agent one is quite plausible. Hettrich (1990) notes that within Ancient Indo-European, the Dative was the most widespread case for the Agents of expression of Obligation and Necessity when they were formed with nonfinite verb forms, e.g. the Latin *gerundivum*:

- (29) *adeundus mihi illic est homo*
 GO.GERUND 1SG.DAT there is man
 'I must go to the man there' (Hettrich 1990: 13, Plaut.Rud.1298)

But Hettrich notes a striking difference between agent-phrases accompanying such nonfinite verb forms as the Latin *gerundivum* (*laudatus est*), and Agent phrases accompanying finite verb forms in the passive voice (e.g. *laudatur*): with the latter, agent-phrases are approximately 5–6 times more seldom than the Dative agent-phrases with nonfinite verb forms such as in (29). Furthermore, the agent-phrases of finite passives are often in variant case forms, a finding that is also mirrored in Old Persian. Hettrich (1990) sees the use of the Dative for agent-phrases with nonfinite verb forms as an extension of the basic recipient/benefactive meaning of the Dative, a finding that is echoed in the more recent discussion of Datives of interest in many Indo-European languages. In sum then, the Genitive/Dative agent-phrase with the m.k. construction echoes the use of the Dative with nonfinite verb forms elsewhere in Indo-European. But the Genitive/Dative was not typical (or common) as the case for *by*-phrases of passives, and indeed is scarcely found in the *by*-phrases of passives in the modern Indo-European languages (cf. Palancar 2002).

Third, in a number of modern Iranian languages the morphosyntactic parallelism between noncanonical subjects with predicates of possession, or mental and emotional perception (*be cold, want, like* etc.), and the A of the ergative constructions is still perfectly preserved (leading some scholars to refer to these noncanonical subject constructions as ‘ergative’). Thus the postulated diachronic link between the two, which presupposes that the m.k. construction had a noncanonical subject, receives indirect support from the existence of such noncanonical subjects in later languages. Finally, and perhaps most tellingly, the noncanonical subject account is significantly simpler. If we assume that the A of the m.k. construction already exhibited subject properties, then we absolve ourselves of the necessity to posit wholesale syntactic restructuring of the construction during the transition to becoming the unmarked means of expressing past transitive propositions. Instead, the assumption is that it was a marginally used variant, but with the above-mentioned demise of the old finite past tenses, it gradually extended its domain of usage. Thus the main mechanism involved was one of extension, or shift of markedness, rather than construction-internal reanalysis. As mentioned above, the passive-theory only works on the assumption that the A-phrase in some manner progressed from a syntactically peripheral adjunct to a syntactically privileged subject, a process for which actual evidence is notably lacking. Occam’s razor surely dictates that until substantial corroborative evidence is forthcoming in favor of the more complex theory, the simpler one is to be preferred. However, although I have argued against the agented-passive origins of ergativity in Iranian, such an account may well be applicable for other languages and language families, briefly summed up in the following section.

2.3 Passive to Ergative Elsewhere

The claim that ergative structures originate from passives has a long history in the literature. Estival and Myhill (1988) suggested that all examples of ergative alignment arose from passive constructions, but this claim has since been refuted (Dixon (1994: 189); see Gildea (1998: 246) for more balanced discussion). Nevertheless, many researchers continue to maintain that passives are a ‘fairly frequent’ source of ergative alignment (Harris and Campbell 1995). Three other language families, or branches, are often cited in this connection: Indo-Aryan (Bubenik 1998), Polynesian (Chung 1977, 1978) and Cariban languages (Gildea 1998: Ch.13). The Indo-Aryan case is perhaps the most discussed (see, among many others, Bubenik 1998, Peterson 1998, Bynon 2005), though not all authors agree on the passive-origins scenario. In Indo-Aryan, the case of the Agent-phrase was the Instrumental, indicating a different development to that which

I have suggested for Iranian. The two need therefore to be treated independently. The Polynesian case has long been considered a clear example of passive-to-ergative, but more recently this interpretation has been called into question (see Otsuka 2000: Ch.8 for discussion). In the Carib case, while passive structures evidently played a role in the emergence of one of several innovative ergative systems, the driving force behind most of the developments in Gildea's masterful account is the cyclic replacement of simple finite verb forms by various kinds of nominalizations. Now a nominalized verb form is typically characterized by its inability to take a subject NP in nominative. Instead, subjects are coded as possessors, or through adpositions (compare English *the hunter's shooting of the tiger*; *the shooting of the tiger by the hunter* etc.). When erstwhile nominalizations become, for whatever reason, the unmarked type of predicate in a language, it is a natural consequence that the oblique marking of subjects is retained. And oblique marking of subjects is one of the features that typically characterize ergative constructions. There is thus a pervasive link between the 'nominal syntax' associated with nominalized verb forms, and ergative alignment. Note that in Iranian too the development of ergative alignment initially involved constructions based on a nonfinite verb form (the participle), which came to be the normal means for expressing certain clause types. Thus the spread of nonfinite verb forms, involving some form of oblique marking of subjects, into domains formerly occupied by finite verb forms is undoubtedly a powerful contributing factor in the creation of ergative alignment.

When evaluating the arguments of respective scholars, it is essential to recall that the term 'passive' is often used in quite different ways by different authors. Claims that initially appear to be mutually incompatible may in fact merely result from different understandings of the terminology involved. Unfortunately, not all scholars have exercised the necessary prudence in defining, and deploying, their terminology.

3. General Principles of Alignment Change

At our current state of knowledge, it is unlikely that general and predictive principles of alignment change can be formulated. Probably the majority of scholars now subscribe to some version of what might be termed the 'contingency' view of alignment systems: different alignments may arise in sub-domains of the grammar as a result of quite independent changes, e.g., phonological change leading to case syncretism etc. On this view, alignment is not a particularly meaningful typological parameter, as it does not correlate significantly with any other features (Dixon 1994: 219). The contingency approach to alignment contrasts with the earlier holistic approach, according to which alignment constituted

a major typological parameter, correlating significantly with a number of other features of the language concerned (cf. the general discussion of holistic typologies in Sung 2001: 42–45). If one leans more toward a contingency view of alignment, then some instances of alignment change may simply be analyzable as by-products of low-level phonological and morphological change, which operate to some extent at least independently of the morphosyntactic profile of the language concerned. Holton (2008) makes the point rather clearly in his discussion of alignment changes in North Halmaheran languages of Indonesia: minor changes in verbal morphology can lead to differences in agreement patterns, which may – somewhat trivially – lead to the languages concerned being assigned to different alignment types. Likewise, Northern Kurdish has been characterized as ergative, while Central Kurdish is considered not to be (Bynon 1979), but the difference in alignment type is largely a consequence of the loss of the Oblique case in Central Kurdish. In other respects, the languages remain extremely similar, far more so than the different alignment labels would suggest.

However, it would be premature to dismiss alignment changes as the mere by-products of ‘blind’ phonological change. There are in fact typological constraints which appear to be operative in mediating the pathways down which alignment changes can take. One is the effects of animacy in the way case marking alignment is distributed over different kinds of nominal constituents (pronouns, NPs). It is well-known that accusative alignment is generally concentrated on the most highly animate nominal constituents, in particular pronouns of the first and second person, while ergative alignment is characteristic of low-animacy NPs (indefinite, inanimate etc.). It was observed that the changes in Iranian case systems in Haig (2008: Ch.4) largely respected these constraints, although the forces of phonological change could easily have tipped the developments in another direction. Another principle which appears to constrain change in alignment systems is Harris and Campbell’s (1995: 258–264) Complementarity Principle. Basically, this means that changes in a language with an alignment split will generally occur in the direction of leveling out the split in the direction of the unmarked construction. So, e.g., in a language where alignment in the past tenses differs from alignment with present tenses, any attested change should work towards reducing the differences between the two alignment systems, and, more specifically, by moving the alignment of the past tense (the functionally and formally more marked environment) closer to that of the unmarked present tense. This principle is discussed under the heading of cross-system harmony in Haig (2008), where it was shown to hold for all the attested examples of change in the Iranian languages, although changes in other directions would have been logically quite possible. Gildea (1998: 91–96) explores the complex bundle of changes in the system of prefixes cross-referencing core arguments in the Carib languages. In different languages, the agreement prefixes manifest several different alignment systems, including accusative,

ergative, tripartite (different markers for S, A and P), and split-S. To add to the complications, different grammatical persons may exhibit different systems in one and the same language. The range of logically possible changes within these systems is therefore immense. Although a number of changes (collapsing of person categories, for example) cannot plausibly be typologically motivated, Gildea does find that the changes in alignment categories generally respect a fundamental principle: shifts in the system work towards creating new, but syntactically consistent, cross-referencing categories. For example, Proto-Parukoto had, in the first person, an original split-S system with one marker for agent-like S (Sa), and one marker for patient-like S (Sp). In the changes to modern Hixkaryana, the Sa marker extended into the Sp domain, leaving a single marker for a unified S category (Gildea 1998: 94). Here again, changes in a complex web of morphological markers is apparently not merely driven by blind phonological attrition, but respects certain higher-level typological pressures. Our final example of rather fixed pathways of change is again from the Iranian languages: The case marking on A (Oblique) and P (Direct) in the ergative construction has often shifted in these languages, with the general result being to bring it closer to the case marking of the accusative construction (A in the Direct, O in the Oblique). But regardless of any other changes that may occur, the first change inevitably affects the case marking of the P, which shifts to Oblique, giving rise to the frequently attested 'double Oblique' systems in these languages (Payne 1980). From the point of view of pure phonological change, this is unexpected, because the most natural change would presumably involve the loss of the Oblique on the A, rather than its addition to the P (see Haig (2008: 225–230) for a tentative explanation of this tendency).

Thus while something like the contingency view of alignment appears to be a fairly healthy initial hypothesis for approaching the data, in-depth studies of individual languages and language families reveal pervasive patterns and cyclical developments in alignment changes suggesting that they do not proceed fully arbitrarily, but are mediated by more general principles of language change and typological pressures. To what extent the generalizations yielded through the study of alignment change in individual language families can be expanded to more general explanatory principles remains a topic for ongoing research.

Notes

1. I would like to thank the editors of this volume for their informed criticism on an earlier draft of this chapter, and Spike Gildea (p.c.) for feedback on the Carib data. The responsibility for the remaining shortcomings is entirely my own.
2. Schmitt (1999: 103) suggests that all m.k. constrictions occur in relative clauses. However, examples such as (12) are not relative clauses.

3. My presentation of the pro-passive arguments is primarily based on Statha-Halikas (1979) and Skjærvø (1985). The oft-cited arguments of Cardona (1970) in favor of the passive analysis are less relevant, as Statha-Halikas (1979) notes. A recent assessment of Cardona's claims is available in Haig (2008: 76–79).
4. Du Bois (1987) also attempts to link PAS to the historical emergence of ergativity, due to the shared pragmatic features linking S and P, and opposed to A. However, although PAS is obviously a robust characteristic of discourse structure cross-linguistically, as yet no convincing evidence for its role in the diachronics of the emergence of ergativity has been forthcoming.

Part V

SEMANTICO-PRAGMATIC CHANGE

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15

Grammaticalization

Elizabeth Closs Traugott

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1. Introduction

In its broadest sense, ‘grammaticalization,’ also known as ‘grammaticization,’ is ‘the process by which grammar is created’ (Croft 2006: 366),¹ or the study of this process. The term is thought to have originated with Meillet (1958, but first published 1912) who was interested in identifying how new categories and system changes arise. This question and the observations that many grammatical items originate in lexical ones and that over time these tend to ‘bleach’ have many predecessors, especially in the eighteenth and nineteenth centuries. Brief overviews of the history of grammaticalization studies appear in Heine et al. (1991), Lehmann (1995), Hopper and Traugott (2003) and Fischer (2007). While most work on grammaticalization is diachronic, with focus on constraints on change, some is synchronic, with focus on ‘principle[s] according to which subcategories of a given grammatical category may be ordered’ (Lehmann 1985: 303). Here I consider only diachronic grammaticalization.

In the past thirty years two major approaches to grammaticalization have developed, which depend to a large extent on how ‘grammar,’ and especially morphosyntax, is conceptualized. One focuses on reduction and increased dependency, the other on expansion of various kinds. Both understand grammaticalization as a subset of possible language changes. Specifically, semantic and phonological changes may intersect with grammatical ones, and may be involved in the input and output of grammaticalization processes, but are

independent of them. The extent to which morphosyntactic change is identified with grammaticalization depends on the approach taken.

The two different conceptions of grammaticalization and some of the problems raised by them are characterized briefly in sections 2 and 3 respectively. Section 4 will address some issues of recent concern, primarily in the areas of syntax and semantics.

2. Grammaticalization as Reduction

What has come to be known as the 'traditional' or 'prototype' view of grammaticalization is that it involves reduction, freezing, and 'obligatorification' of elements (see e.g. Lehmann 1995, 2004, Bybee et al. 1994, Haspelmath 2004). It has its roots in work on changes in morphology akin to, but not necessarily called, grammaticalization, largely on Indo-European (see Chapter 8 in this volume for extensive examples and discussion of various types of morphological change and their status as particular instances of grammaticalization²).

One legacy of early work on morphology is Kurylowicz's (1965: 69) observation that: '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,' a definition that has resurfaced in several different forms, and that motivates a distinction between primary grammaticalization (the initial stage), and secondary grammaticalization (the further development of already grammaticalized elements).³ An example Kurylowicz gives is development of the collective (derivative) in Slavic to the plural (inflectional). As Andersen (in Chapter 8 in this volume) points out, there is sometimes difficulty in defining a boundary between derivational and inflectional morphology. Nevertheless, the directionality of change has been shown to serve as a robust hypothesis, and derivational morphology is often included in work on grammaticalization, both as output of lexical forms and input to inflections (e.g. Nevalainen 1997 on the development of adverbial *-ly* out of derivational *-like*, which itself derived from Old English *lic* 'form, body').

Many widely cited examples of grammaticalization show unidirectionality from more to less complex structure, from more to less lexical, contentful status, and are morphological in nature. They include (a) Lat. *dare habes* 'give + INF have + Pres/2PersSg' > 7thC Romance *daras*, in which a phrasal construction underwent coalescence and what was originally a tensed main verb (*habes*) became an inflection, and (b) biclausal X *be going to* V (motion with a purpose) > monoclausal X *be gonna* V (auxiliary), in which the *to* of the purposive clause became reduced and coalesced with *go*. By hypothesis, *dare habes* involves the fixation in immediately post-verbal position of a relatively contentless finite

verb form of the verb *hab-* that was free in other contexts to appear in a variety of positions, including before the non-finite verb. Between the third and sixth centuries CE, present tense *hab-* was cliticized in post-verbal position, i.e. it became prosodically integrated with its host, and then was further reduced and fused as an inflection. The change resulted in a lexical-grammatical split, in other words, the main verb *hab-* and its reflexes survived in the Romance languages (as has *have* in English), while the grammaticalized form developed separately, becoming less and less restricted to environments in which possession is plausible, and increasingly reduced in form.

Extending the concept of grammaticalization to a variety of languages spoken in Africa, Givón suggested that the syntax of a language 'determines the morphosyntactics of the affixal morphology that eventually evolves' (Givón 1971: 409), and proposed the aphorism 'Today's morphology is yesterday's syntax' (Ibid.: 413). While invaluable as a testable hypothesis, it should be used with caution as various factors may interfere, such as the prosody, the degree and types of syntactic variation at the time of fixation and changes in the system subsequent to initial fixation (see Comrie 1980, Fischer 2007, and Andersen, in Chapter 8 (section 2.1.1) in this volume). Seeking generalizations across language acquisition, creolization and syntactic change, Givón (1979: 209) formulated the model of syntactic change in (1):⁴

(1) discourse > syntax > morphology > morphophonemics > zero

Drawing on extensive investigation of crosslinguistic typological evidence for the structure and development of the morphology of the verb, Bybee et al. (1991: 33) hypothesized that the degree of fusion of a grammatical morpheme or 'gram' is correlated with its age: the more fused, and the shorter the gram, the older it is likely to be. Reduction in length may involve loss of stress and of segments. It includes the development of zero, which usually has grammatical meaning within a paradigm (Bybee 1994). Segments resulting from attrition are drawn from an increasingly restricted set (usually phonologically unmarked). As a result of work of this kind (see also Bybee et al.'s major study of tense, aspect and modality in the languages of the world, 1994) grammaticalization came to be identified with directional change toward morphological fusion.

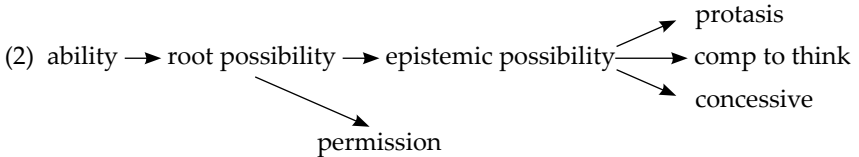
Building in part on (1), Lehmann developed six 'parameters' of grammaticalization which form a correlated set of paradigmatic and syntagmatic constraints (integrity, paradigmaticity, paradigmatic variability; structural scope, bondedness, syntagmatic variability) (Lehmann 1995: Chapter 4). These parameters are most easily operationalized in languages with extensive inflectional morphology. For languages with little or no inflectional morphology, such as Chinese and indeed Present-Day English, they need to be modified. Diewald (forthcoming) has suggested that paradigmaticity should be understood as

choices at various levels, and obligatoriness as 'If form X, then form Y.' Streamlining the six parameters, Lehmann defined 'grammaticalization of a linguistic sign' as 'a process in which it loses in autonomy by becoming more subject to constraints of the linguistic system' (2004: 155). Likewise Haspelmath proposed that grammaticalization is 'a diachronic change by which parts of a constructional schema come to have stronger internal dependencies' (Haspelmath 2004: 26). In these characterizations, Lehmann and Haspelmath view grammaticalization primarily as a change in form, and grammar is typically conceptualized as syntax, morphology and phonology.⁵ This is in contrast to work by Bybee and her colleagues who focus on correlates between semantic, morphosyntactic and phonological change.

One important research question has been what role semantics plays in grammaticalization. Proposing that metaphor and conceptual metonymy (more specifically pragmatic invited inferencing, see Traugott and König 1991) are crucial factors in the onset of grammaticalization, Heine et al. (1991) and Bybee et al. (1994) among others developed extensive typologies of changes typical of languages of the world. The data were derived from grammars, some of which are historical, many not. The typologies include typical paths of development from lexical to grammatical forms. Sources, and, in some cases, later developments of several grammatical categories have received book-length treatment, e.g. auxiliaries (Heine 1993, Kuteva 2001), markers of possession (Heine 1997b), spatial grams (Svorou 1993), temporal adverbials (Haspelmath 1997) and indefinite pronouns (Haspelmath 1997). Heine and Kuteva (2002) summarize many of these crosslinguistic tendencies. Here the focus is on grammaticalization as change in function, e.g. in Japanese lexical *mono* 'thing' > sentential nominalizer > concessive connective (Horie 1998). As a generalization, the source term must have the appropriate semantics. For example, aspectual completive often derives from a main verb with completive meaning such as 'finish' or 'put aside,' e.g. Chinese *le* < *liao* 'finish,' Japanese *-te shimau* < 'finish, put away,' Korean *-a/e pelita* < 'throw away, spoil,' Spanish *acabar (de)* < 'end.' Furthermore, the source term must occur in an appropriate syntactic frame, e.g. completive arises in a frame with another verb; Heine (1997b: 47) hypothesizes that *X takes Y*, *Y is located at X* and *X's Y exists* are among event schemas out of which possessives arise. The methodology is based on languages with extensive histories, and used to develop testable hypotheses about potential 'paths' of change for languages without such histories.

The main theoretical import of work on primary and secondary grammaticalization was the hypothesis of unidirectionality, a topic that was the center of attention for about ten years from the mid-90s on. Haspelmath (1999: 1044) regarded '[t]he irreversibility of grammaticalization [a]s one of the most important constraints on possible language change.' Bybee et al. (1994) regarded unidirectionality as a hypothesis, which they set out to test in their book: 'we posit

a direction characterizable as involving a series of developments by which the originally concrete and specific meanings associated with lexical material are gradually eroded, with the resulting grams displaying increasingly abstract and general meaning. At the same time reduction of form takes place along with a growing dependence of the gram on material in its environment' (p. 12). The hypothesized unidirectionalities were described in terms of 'paths,' e.g. Bybee et al. (1994: 240) proposed (2) as the branching path of ability:



Newmeyer (1998) interpreted schemas such as (1) and (2) as deterministic, and designed to show that grammaticalization is a process distinct from others in language. He argued that the term 'process' is dangerous in historical work, as it implies change is 'subject to a distinct set of laws that are independent of the minds and behaviors of individual language users' (p. 238), whereas unidirectionality is an epiphenomenon of language learners' strategies, such as the Least Effort Strategy (Roberts 1993). Unidirectionality came under severe scrutiny not only in Newmeyer (1998) but especially in Campbell (2001). However, the 'paths' of grammaticalization had for the most part been developed by 'functionalist' linguists who assumed, with Greenberg (e.g. 1978), that universals are probabilistic tendencies, not absolute, and who conceptualized the 'paths' neither as neuronally hardwired, nor as independent processes, but as schemas or generalizations across generations and communities of speakers (Andersen 2001a, 2008). Change does not have to happen, and often does not, or starts, and then stops. As pointed out in Nichols and Timberlake (1991), the Russian instrumental inflection remained formally highly stable over many centuries. Syntactic and functional changes led to changes in its use, and by the seventeenth century 'The overall effect has been to fix usage in one domain and develop variation in another' (p. 142). The debate, therefore, was largely about how the architecture of 'grammar' is conceptualized. At the same time, it was invaluable in clarifying many issues (see Fischer 2007), and in raising new ones about what might count as real examples of 'degrammaticalization' (Norde 2002), and of lexicalization as a type of change in its own right, not merely as a counterexample to unidirectionality in grammaticalization (Brinton and Traugott 2005).

Ramat (1992) had proposed that *up*, *ante*, *-ism*, and such formations of verbs and nouns from grammatical and derivational morphemes were counterexamples

to (1), not only on grounds of a perceived shift from grammatical to substantive, but also, especially in the case of examples like *-ism*, because of the shift from bound to non-bound status. Ramat considered such examples to be cases of degrammaticalization,⁶ which may result in lexicalization. However, since then this concept of degrammaticalization has been challenged. Norde (2009) argues that the use of *-ism* or of *up* as a nominal is not degrammaticalization but word-formation. She shows that virtually all genuine cases involve only one step in the gaining of autonomy or substance by a grammatical item or construction, e.g. Northern Saami case suffix *haga* 'abessive' > postposition (see Nevis 1986). Most importantly, degrammaticalized elements are relatively unique, and do not have chain effects.

When lexicalization is considered in its own right, it shares many characteristics with grammaticalization, most notably univerbation, e.g. *gar leac* 'spear leek' > *garlic*, Chinese *lao shu* 'old mouse' > *laoshu* 'mouse' (see *xiao laoshu* 'young mouse'), Korean *po cyokay* 'cheek clam' > *pocokay* 'dimple' and Japanese *mi na moto* 'water genitive source' > *minamoto* 'source, origin.' Indeed, Lehmann (2002) identifies lexicalization with the development of 'holistic' interpretations in which structural compositionality is lost and argues that if grammatical items become fused, they 'lexicalize' before becoming more grammatical. Thus Vulgar Latin *de ex de* is said to be lexicalized in Modern Castilian as *desde* 'since,' and grammaticalized in French as *dès* (Lehmann 2002: 9–10). Since the concept of univerbation and its subtypes, coalescence and fusion, already exists, and lexicalization is in part a semantic, not purely formal, phenomenon, it seems preferable to retain the word univerbation for the formal phenomenon in question, and to define lexicalization in terms of the use of a syntactic string or word-formation as a new contentful form that is semantically not fully compositional and is relatively idiosyncratic (Brinton and Traugott 2006: 96).

3. Grammaticalization as Expansion

Here I turn to what has come to be known as the 'extended view of grammaticalization.' While unidirectionality has continued to be a central hypothesis in work on grammaticalization in the years since Givón proposed (1), the requirement of structural reduction and increased dependency has been questioned. It has been proposed instead that they are characteristic of grammaticalization in only certain domains of grammar: those that pertain to those parts of grammar that may be expressed inflectionally in languages with inflections, especially tense, aspect, modality, case, number agreement, etc. However, where other domains are concerned, such as the development of connectives, and of discourse markers, grammaticalization, understood as the 'coming into being of grammatical elements,' may involve structural expansion (e.g. Tabor and

Traugott 1998, Himmelmann 2004). Himmelmann has proposed that grammaticalization involves three types of context-expansion: (i) host-class expansion, (ii) syntactic expansion and (iii) semantic-pragmatic expansion. For example, when a demonstrative develops into a definite article the set of nominals with which it occurs expands (cf. use with proper nouns, e.g. *The Hague*), and it becomes more type productive; its syntactic use is extended from core argument positions to peripheral ones, e.g. adpositions; and pragmatically it becomes available for 'associative anaphoric uses (*a wedding—the bride*)' (Himmelmann 2004: 33). By contrast, lexicalization does not involve host-class expansion, in his view.

One of the recurrent observations in work on grammaticalization is that grammatical expressions typically become more abstract, schematic and productive (in terms of both token and type frequency, see Bybee 2003), while 'substantive' (lexical) ones are relatively less productive and substantive rather than schematic. The original observation was that 'bleaching' occurs in grammaticalization, in other words, lexical meaning is lost, and what is left is grammatically enriched meaning, as in the case of motion verb *be going to* > future *be going to/be gonna* (Sweetser 1988, Traugott and König 1991). Such 'bleaching' naturally leads to loosening of constraints on co-occurrence, or 'generalization' (Bybee et al. 1994). Viewed in terms of the historical trajectory of the grammaticalizing item this generalization can be seen to be expansion in Himmelmann's sense.

Among reasons for the shift from grammaticalization viewed as increased dependency, to grammaticalization viewed as extension is different kinds of research agendas. Kiparsky (forthcoming) distinguishes between research focusing on grammaticalization as change in form and that focusing on it as change in function; e.g., change from clitic to suffix involves increased internal dependency, but not necessarily change in function; by contrast, a change from deontic to epistemic involves change in function, but not necessarily in dependency. Another reason for the kinds of differences in approach can be attributed to the fairly radical shifts in linguistic theory and methodology that occurred in the late 1990s. In recent models of generative syntax, particularly Minimalism, changes may be construed in terms of Merge and Move, and entail movement 'upward' into 'higher' functional categories (e.g. Roberts and Roussou 2003, Gelderen 2004). The concept of what 'grammar' is has also been expanded. The nature of information structure, especially Topic and Focus, has become increasingly important in linguistic theory, whether in 'functional' approaches (e.g. Lambrecht 1994) or in formal Minimalist approaches (even if conceptualized more in terms of syntax than pragmatics in this model, see e.g. Rizzi 1997). Discourse analysis has become a subfield in its own right. Alternative models of grammar have been developed, e.g. cognitive grammar, in which meaning and conceptualization are privileged (see Langacker 1987, 1991), and construction

grammar (e.g. Goldberg 1995, 2006, Croft 2001), in which 'constructions' involve form-meaning pairings (see section 4.1 below). A related factor in theoretical linguistics in general is the shift toward addressing issues in variation and in quantitative analysis (cf. Bybee 2006).

The advent since the mid-90s of electronic corpora of spoken as well as written language has enabled rigorous work on change in grammars of usage (see e.g. Croft 2000), rather than on change in grammars of competence (see e.g. Kiparsky 1968, Lightfoot 1979). The result has been twofold. There has been a shift toward privileging of micro-changes (e.g. Roberts and Roussou 2003, Bybee 2006) over 'catastrophic' macro-changes or 'saltations' (e.g. Lightfoot 1999). And increased attention has been paid to communicative aspects of language such as are expressed by 'pragmatic' markers generally, and in the rhetorical moves that lead to change.

The view of grammaticalization as 'increased dependency' appeared to exclude polyfunctional 'pragmatic' elements such as discourse markers and connectives (e.g. *instead, I think*; Japanese *tokorode* 'incidentally' (< *tokero* 'place' + *de* 'locative'), *demo* 'but,' *ga* 'but,' and *te* used as a repair particle). This was in part because discourse markers were originally considered to be 'outside' of grammar (they do not appear in the Graeco-Roman grammatical tradition) or at a 'higher, discourse' level than syntax (Wischer 2000). Also, examples in English, French, Japanese and some other languages, typically have disjoint syntax and prosodic patterns, and therefore do not fit a model of grammaticalization as increased dependency. This led to the proposal by Erman and Kotsinas (1993) and Aijmer (1996), that the development of discourse markers and other expressions deemed to be 'peripheral to' or 'outside of' core grammar be treated as instances of 'pragmaticalization,' even though the processes of development are similar to those for other types of grammaticalization, barring structural bondedness or dependency (Brinton 1996, Onodera 2004; papers in Ohori 1998, Onodera and Suzuki 2007). Even if *actually, I think* or Japanese *te* can occur in several positions in a clause, different functions are correlated with different positions (discourse marker and connective functions tend to be at clause periphery). More importantly, as Diewald (2006) shows, in German a related set of pragmatic markers is highly constrained: the so-called modal particles (e.g. *aber* 'adversative') are deictics that relate the utterance to a specific type of pragmatic presupposition and that are roughly equivalent to English discourse marker uses of adverbs like *actually, really*. They occur exclusively in the 'middle field' after the finite verb in declarative sentences. If one were to exclude 'pragmatic markers' because of their procedural, deictic function from grammaticalization, logically one would have to exclude all modals, tense, aspect, demonstrative and other typical grammatical markers, because they also have such functions.

4. Some Current Issues

Work on grammaticalization has expanded in many different directions during the last decade. Here I restrict discussion to four that appear to have taken center stage, specifically (i) the insights that construction grammar can bring to work on grammaticalization, including distinctions between grammaticalization and lexicalization, (ii) motivations for the onset of grammaticalization, (iii) revisiting the mechanisms of analogy and reanalysis and (iv) areal and contact studies. Other theoretical and methodological areas of wide current interest include frequency effects (see Bybee 2006, 2007, Bybee and Hopper 2001), corpus linguistics (e.g. Lindquist and Mair 2004), ‘collostructional’ analysis (Hilpert 2008), and the role of (inter)-subjectification in grammaticalization (for different perspectives, see Athanasiadou et al. 2006, Davidse et al. forthcoming), among others.

4.1 Insights from Construction Grammar

The term ‘construction’ has been used for several decades in work on grammaticalization, usually in the sense of syntactic string, phrase or constituent. Constructions in this sense have been identified as sources, along with lexical items, for grammaticalization (e.g. *dare habes* > *dares* cited above). They have also been identified as its outcome (e.g. future *be going to*), and, most importantly, as the local context enabling grammaticalization. Bybee et al. (1994: 275) identify the use of a motion verb in an imperfective construction and in a future-oriented context as prerequisite conditions for the grammaticalization of *be going to*.

The advent of construction grammar in the 1990s (e.g. Goldberg 1995, 2006, Kay and Fillmore 1999, Croft 2001, Fried and Östman 2004, Leino 2008) allowed for a reconsideration of what ‘construction’ means.⁷ According to Croft (2001) and Goldberg (2006), a construction is a symbolically linked form-meaning pairing. Form involves syntax, morphology, phonology and meaning involves semantics, pragmatics and discourse function. To date most construction grammar has been developed with synchronic issues in mind. It has also had little to offer in various domains, including morphophonological change, or clause combining. However, rethinking grammaticalization in the light of construction grammar has proved fruitful in a number of ways.

Most obviously, construction grammar provides a framework in which both meaning and form have to be considered together; even though this may have happened in practice, formulations like (1), which is expressed in terms of form alone, and (2), which is expressed in terms of meaning tend to obscure the importance of the link between meaning and form. Because, in Croft’s model,

there are six subparts to a construction, each one can change independently within the frame of the larger, more schematic construction. Likewise, in the HPSG model of construction favored by Fillmore and his colleagues, and used by Fried (2008) to account for grammaticalization in Old Church Slavonic, each subpart of a construction can be formalized in detail, and it is possible to be specific about both the micro-steps in a particular change, and about the sequence of such changes. Often in grammaticalization, a pragmatic implicature may become conventionalized and eventually semanticized resulting in mismatch between meaning and syntax. Then a syntactic change may occur, followed by morphological one.

An example is the development of (*a*) *lot of* from a binominal partitive ('a unit of,' e.g. *a lot of fans is for sale*) to quantifier (*a lot of fans are for sale*, *a lot of fun*) and degree modifier (*a lot busier*). Quantifier uses appear ca. 1800, presumably with a mismatch between the syntax (NP1 is the head) and the semantics (NP2 is the head). But later, agreement patterns show that a syntactic reanalysis took place, as attested by *a lot of our problems are psychological*, where the verb agrees with NP2, and by the degree modifier uses.⁸ One of the hypotheses of construction grammar is that a construction attracts or 'coerces' new members, i.e., imposes a frame on them. While the historical record shows that alignment is not exact (nor should it be expected to be, as pure synonyms would arise), it does, however, shift attention from individual changes to 'attractor-sets' (Bisang 1998, Schøsler 2007), and hence to analogies (see section 4.3. below). Rostila (2006) proposes that storage as a construction may contribute to grammaticalization by conventionalizing pragmatic inferences, backgrounding the literal meaning of parts of constructions, as well as the internal structure of complex units and their lexical meanings. So from the perspective of construction grammar, interest is not solely or even primarily in the development of the individual 'micro-construction' (*a*) *lot of*, but of the larger 'macro-construction' of binominal quantifiers, which also includes *a bit/shred/jot of*, and the closely related set of approximators, *a sort/kind of*, and which of these become degree modifiers (*a lot/bit/sort of/kind of*) (see e.g. Denison 2002, Traugott 2008b). Trousdale (2008, forthcoming) has proposed further that the more schematic (macro-)constructions themselves serve as attractors for new instances of grammaticalization such as *a hell of a > helluva > hella*.⁹ This has no semantic similarity to *a lot/bit/sort/kind of*, etc. in its origin, but has many of their quantifier and intensifying degree modifier functions and appears to have been attracted to the degree modifier construction. On this view, grammaticalization involves increased schematicity and productivity, but decrease in compositionality. Furthermore, schematic macro-constructions grammaticalize (see e.g. Schøsler 2007 on valency patterns in changes from Latin to Romance).

Trousdale (2008) has proposed that, by contrast, in lexicalization erstwhile schematic constructions come to be less schematic, less productive and less

compositional—as the scalar terms ‘more’ and ‘less’ indicate, here as elsewhere, the distinction is gradient. Brinton (2008) gives the example of a continuum between, on the one end, complex predicates with a ‘light verb,’ an indefinite article, and aspectual, hence grammatical character, e.g. *give an answer, make a promise*, which is an ever-increasing and productive set in English and on the other end expressions like *lose sight of, have recourse to*, that have variably fixed, relatively idiosyncratic patterns and are minimally productive, hence more lexical in character.

Grammatical constructions may have few substantive components, and then only highly schematic ones, e.g. NP of NP constructions, or indeed none (e.g. Topic and Focus). This means that ‘non-prototypical’ grammaticalization of nonlexical material can readily be accounted for. This includes grammaticalization of demonstratives (Diessel 1999) and of Topic and Focus (Bisang 1998, Lehmann 2008a), as well as clefts of various types (see Traugott 2008a on pseudo-clefts).

4.2 Motivations for the Onset of Grammaticalization

Many researchers have argued that motivations or reasons for change lie in the fact that every speaker acquires a language, and that input to acquisition is variable. Given the specific characteristics of grammaticalization, others have sought to find additional motivations. Lehmann (1985) suggested that speakers wish to be ‘expressive,’ Haspelmath (1999) that they wish to be ‘extravagant,’ but, in so far as these implicate hyperbole beyond mere difference, neither of these alleged motivations seems to fit the well-known fact that for the most part lexical expressions that come to be grammaticalized are in their origins largely fairly general in meaning, e.g. ‘go, come, want, will, finish, back, head’. Heine et al. (1991) emphasized metaphorical (analogical, paradigmatic) thinking as a motivation, while Traugott and König (1991), drawing on Gricean conversational maxims, emphasized conceptual metonymic (syntagmatic) thinking.

Central to much of Traugott and her colleagues’ work since the early 90s has been the hypothesis that most instances of grammaticalization originate in ‘invited inferences’ (pragmatic implicatures, see Grice 1989, Levinson 2000) that come to be semanticized. If this is all, then only a semantic change occurs, but the resulting mismatch between syntax and semantics may give rise to a new analysis of the original string. If this reanalysis results in a more grammatical expression, grammaticalization has occurred. Diewald (2002, 2006) distinguishes a ‘critical context’ in which there are ‘multiple structural and semantic ambiguities’ (2002: 103) (essentially the stage of mismatch), from an ‘isolating context,’ in which one reading is favored over the others, and some structural contexts are excluded (the stage at which the new grammatical use has become

crystallized, and new distributions can be observed). Heine (2002) likewise distinguishes ‘bridging’ from ‘switch’ contexts, but with more emphasis on semantics and pragmatics, less on structural changes. The binominal quantifiers discussed in 4.1. are a prime example. Here the context is the clause. But contexts are often larger, and in the extended view of grammaticalization have been shown to include prior clauses. This is particularly true of contrastives such as *instead*, and marked negation (e.g. French *ne pas*), which typically arise in the context of prior contesting or negative clauses.

Recently, Detges and Waltereit have argued that to account for the rather different types of grammatical expressions that arise, more than invited inferences is needed. Gricean Maxims need to be combined with more interactional ones, such as those proposed by Keller (1994). Whereas Grice’s maxims concern the speaker’s beliefs and truth, Keller’s concern negotiating social issues such as identity. Detges (2006) hypothesizes that a likely motivation for the shift from topic- to subject-oriented word order and the development of obligatory subjects in French is turn-taking and contrastive self-assertion. Waltereit and Detges (2007) argue that various types of negotiation establishing mutual beliefs or discourse purposes are major factors in the onset of grammaticalization of discourse markers. To these could be added the importance of contesting stances in the development of contrastive connectives.

Other major factors that have been hypothesized to trigger the onset of grammaticalization are analogical thinking (Fischer 2007), online production and perception, and especially the effects on neuromotor behavior of repetition and frequency (Haiman 1994, Bybee 2003). While repetition by members of a language community undoubtedly is a major factor in the fixing, freezing and autonomizing associated with grammaticalization, frequency itself appears implausible as a motivation for the onset of grammaticalization. This is because it leaves the question unanswered what motivated the frequency in the first place, and secondly the historical record suggests that several changes considered to be instances of grammaticalization either show significant increases in frequency after grammaticalization has set in (see Hundt 2001), or little increase at all (Hoffmann 2005).

4.3 Revisiting Analogy and Reanalysis

While ‘motivation’ has to do with the ‘why’ of change, ‘mechanism’ has to do with the ‘how’ of change. The main mechanisms relevant for grammaticalization are usually considered to be reanalysis (the focus here is on difference from the original source), and analogy or extension (the focus here is on matching of the original source with some extant exemplar). The role of reanalysis

and analogy is a major topic of debate, and their respective roles have recently been reversed by some researchers, e.g. Fischer (2007).

Meillet famously said:

‘Tandis que l’analogie peut renouveler le détail des formes, mais laisse le plus souvent intact le plan d’ensemble du système existant, la ‘grammaticalisation’ de certains mots crée des formes neuves, introduit des catégories qui n’avaient pas d’expression linguistique, transforme l’ensemble du système’. ‘While analogy can renew details of forms, but usually leaves the structure of the existing system intact, ‘grammaticalization’ of certain words creates new forms, introduces categories that had no linguistic expression beforehand, transforms the system as a whole’. (Meillet 1958: 133)

At the time, the concept of analogy was not well worked out, and should not be associated with analogy as we now conceptualize it.

Meillet did not use the word ‘reanalysis,’ a concept that came to be defined in the 1970s as: ‘change in the structure of an expression or class of expressions that does not involve any immediate or intrinsic modification of its surface manifestation’ (Langacker 1977: 58), in other words, change in parsing. This definition has been considered foundational ever since, and extended from syntactic to semantic and phonological change, as well as to lexicalization. There are, however, problems. One is that reanalysis is not manifested except through analogy (Harris and Campbell 1995, Hopper and Traugott 2003), i.e., when new distributions are modeled on the new covert analysis.

In the literature on grammaticalization there has been considerable discussion of whether reanalysis can be identified with grammaticalization. Heine and Reh (1984), Hopper and Traugott (2003), Lehmann (2005), and others argue it cannot. For one, not all reanalysis involves change in morphosyntax (e.g. semantic change is semantic reanalysis), and reanalysis is not unidirectional, as is evidenced by counterexamples to grammaticalization, and such lexical-internal rebracketings as *hamburg-er* > (*ham*)*burger*). Nevertheless, Hopper and Traugott argue that reanalysis is the primary mechanism resulting in grammaticalization. By contrast Harris and Campbell (1995: 89–92) subsume grammaticalization under ‘innovative’ reanalysis, Roberts (1993) sees grammaticalization as an epiphenomenon of reanalysis, and Roberts and Roussou (2003) argue that grammaticalization is micro-parameter resetting, i.e. reanalysis. In earlier macro-parametric approaches it was suggested that reanalysis is not only abrupt but also involves a big step, saltation, or even catastrophe (capable of ‘transform[ing] the system as a whole’). However, grammaticalization is associated with ‘gradualness’ in the sense of small steps, and therefore Haspelmath (1998) rejected reanalysis as a key to grammaticalization. Given the

current theory of micro-parameters, or of multilayered constructions, reanalysis does not have to be construed as involving saltation, but can be associated with gradualness, in the sense of micro-steps.

As attention has shifted from the trajectories of individual expressions and from schematic clines to extension of and alignment within a category or construction, the role of analogy in grammaticalization has been reassessed (see especially Fischer 2007). Fischer thinks of analogy as a motivation (analogical thinking) and as an exemplar-based mechanism. It seems useful to separate the two meanings of 'analogy,' and to refer to the mechanism as 'analogization.' According to Fischer, the mechanism can operate on surface forms, without necessary appeal to meaning. This, however, leaves open the question why the analogy is made in the first place.

Most discussion of analogization is exemplar-based, and therefore has little to say about the development of new expressions that have no model, such as the development of articles out of demonstratives in Romance and Germanic. Kiparsky (forthcoming) has proposed instead an Optimality Theoretic approach that (a) equates grammaticalization with analogy based not on exemplars but on UG constraints, (b) acknowledges that analogical change (i.e. analogization) is reanalysis, (c) shows that analogy can give rise to new structures, and, most dramatically, that (d) the unidirectionality of grammaticalization resulting from optimization is exceptionless. Optimization is 'the elimination of unmotivated complexity or idiosyncrasy.' Instances of degrammaticalization are idiosyncratic results of sporadic exemplar-based analogy.

4.4 Areal and Contact Studies

Most work on grammaticalization has been conducted assuming a relatively homogenous speech community. In one of the first papers on grammaticalization in a contact situation, Sankoff and Brown (1976) suggested that Tok Pisin creole relativization patterns were developing based on English. However, it was subsequently shown that many cases of grammaticalization in creoles and other contact languages may have been calqued (translated) from local substrate languages (see e.g. Keesing 1991 on the importance of Melanesian languages in the development of the Tok Pisin tense, aspect, modality system, Bruyn 1996 on the influence of West African languages on Sranan complex prepositional phrases). Bisang (1998) proposes that constructions (in the construction grammar sense of the term), provide the frame for transfer in contact situations. The ubiquity of the transfer and replication of grammatical meanings and structures is the focus of Heine and Kuteva (2005, 2006). In Heine and Kuteva (2005) they argue that transfer is not merely a matter of borrowing an item. It typically involves complex cognitive processes of equivalence recognition, e.g. younger

speakers of Tariana, a North Arawak language of Brazil, recognizing that Portuguese interrogative pronouns are also used as relative clauses, have grafted the Arawak interrogative (*kwana* 'who?') onto their own relative constructions (p. 2–3). New structures developed this way may themselves undergo grammaticalization, or may build on grammaticalization processes that were already in place in the contributing language. Heine and Kuteva suggest that 'grammatical replication is fairly independent of the particular sociolinguistic factors that may exist in a given situation of language contact' (2005: 260). Furthermore, it may affect morphological, syntactic, and pragmatic structure (Ibid: 261). In both books the authors emphasize the extent to which contact studies confirm the hypothesis of unidirectionality of grammaticalization. They show how studies of this kind can lead to a better understanding of how and to what extent grammatical change is internally or externally motivated. Above all, they show that heterogeneous, not homogeneous, languages are the norm, and that while there may be political or geographical units, these have little to do with linguistic communities. Work on grammaticalization, language change, and language contact in general must be theorized in ways that account for these factors.

Notes

1. Lehmann (2005: 155), however, objects that this characterization renders the concept too 'wide and heterogeneous.'
2. Andersen (this volume) restricts the term 'grammaticalization' to 'grammaticalization schemas' or abstract macro-patterns that are referred to in this chapter as 'paths.' He refers to individual instances of grammaticalization as 'grammations.'
3. This terminological distinction is due to Givón (1991: 305).
4. 'Discourse' is to be understood as relatively free word order and parataxis.
5. However, Lehmann has recently been concerned with information structure as well, see Lehmann (2008a).
6. Haspelmath (2004) has suggested the term 'antigrammaticalization.' Since most cases identified involve morphology, Idiatov (2008) suggests 'antimorphologization.'
7. There are some fundamental differences among these models which will not concern us here regarding whether categories are universal or language-specific, and whether argument structure is semantic or syntactic (see Croft and Cruse 2004 for an overview).
8. Francis and Yuasa (2008), however, argue that mismatch is still current in Present Day English.
9. *Hella* is said to be specific to California English.

16

Semantic Change

Eugenio R. Luján

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1. Introduction

Semantics is the science of meaning. This definition goes back to Michel Bréal, who in 1897 published the first comprehensive study on this subject and coined the term ‘semantics’ itself (French *sémantique*), based on Old Greek *sēmantikós* ‘significant’ (from the same root as the verb *sēmainō* ‘show by a sign, indicate’).

In this chapter we thus deal with changes in meaning or, rather, with changes in the way in which meaning(s) and form(s) relate to each other. The Saussurean tradition has emphasized how the relationship between the phonetic shape of a word (*signifiant*) and its meaning (*signifié*) is arbitrary, in the sense that it is only due to a convention between the speakers of a language or a dialect. The arbitrariness or conventionality of this relationship can be easily proved by the fact that the same meaning is expressed by different words in different languages, as shown in (1).

(1) English *cow*, Spanish *vaca*, Italian *mucca*, Sanskrit *gaus*, Hebrew *pārāh*

If there were a necessary connection between meaning and form, we would expect that the same word (or, at least, similar ones) were used across languages.¹ Given that that relationship is conventional, it can change along time.

Semantic change can thus occur because the relation between *signifiant* and *signifié* is arbitrary.

Meaning is at the core of language by its very nature—no language would be possible if its linguistic units did not have a meaning. In spite of its central role, the study of meaning has been somewhat neglected in some approaches to language. It is sometimes considered the less linguistic part of language, in the sense that meaning has a direct connection to natural and social realities, which is not the case with other areas of language—we do not expect that the study of the social structures of the speakers of a language will cast any light on the understanding of the phonology of their language nor that there is a correlation between ergativity or accusativity and hunter-gatherer societies in opposition to agricultural societies, but we do expect a difference of vocabulary and the organization of the meaning of words between societies with a different level of technological development.

From a historical perspective, this means that a change in the sociocultural or environmental conditions of the speakers of a language may have an impact on this area of language—new words may be coined or borrowed or new meanings of words may arise; compare Spanish *ratón* ‘mouse’ (both animal and computer device, as a calque from English *mouse*; see section 4.3) vs. Italian *mouse* (only the computer device, directly borrowed from English). A whole new terminology related to computers has been introduced in many languages of the world in the past 30 years or so. The development of a new technology has had a direct bearing on lexical and semantic change.

Semantic change can be studied basically from two perspectives—semasiological and onomasiological. In a semasiological approach to semantic change, the focus will be on analyzing the variations in the meaning that a given word (or other linguistic unit) has undergone along time. We will learn how Latin *dēnārius*, a specific type of silver coin, has evolved into Spanish *dinero* meaning ‘money’ in general or how Latin *argentum* ‘silver’ has become French *argent* meaning both ‘silver’ and ‘money’—a change paralleled in some American varieties of Spanish in which *plata* ‘silver’ means ‘money,’ too. This is probably one of the most popular areas of linguistics. People seem to be fascinated by the changes in the meanings of words and what their original meaning was—their ‘etymology’ (see Kronasser 1952 and Chapter 17 in this volume).

Instead, from an onomasiological perspective, we will turn our attention to a given meaning or set of related meanings (e.g., verbs related to ‘knowledge,’ color names, etc.) and analyze how they have been expressed along time—how many words are used, how the meanings of these words differ from each other, etc. This will introduce us in the domain of semantic fields (see section 3.2.2 below). A question usually addressed to someone who knows a foreign language is: how do you say X in that language? People usually feel a bit disappointed when there is no straightforward answer to that question. In popular belief

languages are thought to be isomorphic—concepts are expected to be organized in the same way across languages, so that when speaking another language you would just have to change the label (i.e., the word) you are using. However, the underlying mental structures usually differ from one language to another. For instance, in English or in French the day is divided into four units (*morning*, *afternoon*, *evening*, and *night* or *matin*, *après-midi*, *soir*, and *nuit*), while in Spanish there are only three (*mañana*, *tarde* and *noche*), so that the limits cannot be at the same point. The organization of a given conceptual domain or semantic field may thus also vary along time for different reasons, so it is important to pay attention to how and why these changes can be brought about.

Although we will focus on diachronic change, a few words on the organization of meaning are in need. The meaning of a word is not as straightforward as we tend to think. Let us use *book* as an example. There will be no difficulty for an English speaker in producing a mental image associated with the word *book*. However, if they are asked how many pages an object must have to be a book, maybe the answer would not be so easy—does an object having just 20 pages fall into the category of ‘book?’ Certainly, it will be more likely considered a book if it is bound and has a hard cover, otherwise it will probably be regarded as a ‘leaflet.’ However, if we are told to take the book on the table and there are only a key-holder and the 20-page object, we would not have any problem in identifying which one the book is.

A word (or any other linguistic unit) has core and peripheral meanings. As in the example, there are objects that we will have no doubt in labeling as ‘books,’ ‘cars,’ ‘tables,’ ‘prayers’ or whatever, while this will not be so clear-cut in other cases. This fuzziness as to the limits of the meaning of a word (or the range of objects or mental representations it may refer to) has important implications for our understanding of semantic change. Words tend to have fuzzy meanings and be polysemous and their meanings frequently overlap—depending on pragmatic factors a five-year old male human being can be a *person*, a *male*, a *boy* or a *child*. No radical difference can be established between encyclopedic and linguistic knowledge, either.² Traditionally, semantic change has focused on the study of the change of meaning of words, but there are also semantic changes of collocations, word formation patterns and syntactic constructions. Great attention has been paid to some of these in past years, for instance, in the field of grammaticalization (see Chapter 15 (section 2) in this volume).

2. Types of Semantic Change

Since the beginnings of semantics, several attempts have been made to produce comprehensive classifications of semantic changes. In spite of those efforts, none of them is wholly satisfactory³—the divisions are not exhaustive and the

various criteria employed frequently overlap. A particular change of meaning can thus be at the same time an instance of specialization and pejoration. However, such classifications are useful in understanding the types of processes involved in semantic change. According to the nature of the change, we make a threefold division into mechanisms of semantic change, changes in the scope of meaning and changes in the connotations of a word.

2.1 Mechanisms of Semantic Change

The types of semantic change that we will be analyzing in this section can be due either to similarity or contiguity, whether these are real or supposed. They can be either semasiological, as in metaphor and metonymy, which are based on the connection between the referents, or onomasiological, as in folk etymology or ellipsis, for which the basis of the semantic change lies in the linguistic connection of the word to other words (Ullmann 1962: 211–227).⁴

2.1.1 Metaphor

Metaphor (from Greek *metaphorá* ‘transference’) involves conceiving or understanding an object, being or experience in terms of another different one. As Claudi and Heine (1986: 299) have stressed, this is usually done by employing conceptually less complex phenomena to visualize more complex ones.

Many different definitions of metaphor have been proposed in linguistic studies, so that our understanding of a given semantic change as due or not to metaphor may depend on the definition that we follow. It may thus be useful to check if a particular semantic change fulfills all the following four conditions (Heine 1997b: 142) to consider it an instance of metaphor. We will exemplify the conditions with the evolution of meaning of *mouse* (an animal and now also a computer device).

- The source and the target concept are different referents—in this case the source is an animal, while the target is an inanimate object.
- The transfer of meaning involves two different domains of experience—in this case from the domain of animals to that of computers.
- There is no formal expression of the transfer.
- If taken literally, the metaphorical predication is wrong—the ‘mouse of the PC’ is not really a ‘mouse.’

Metaphor is always based on a perceived similarity between the source and the target (or the vehicle and the tenor of the metaphor in more traditional terminology)—they must share one or more traits, which constitute the ground for the metaphor (in this example, the shape of the mouse used with the computer, together with the long cable attached to it in earlier models, made it

similar to the animal). It should be noted that the similarity does not need to be 'objective'; on the contrary, it frequently has a cultural or social basis (Lakoff 1987). One of the now classical examples is the conceptual metaphor 'argument is war,' which is frequently found in Western societies—it would not be possible in a culture in which arguing is never conceived as fighting.

As Lakoff and Johnson (1980) showed, metaphor pervades our language and is inherent to an appropriate understanding of our daily lives. It is then no wonder that it plays a central role in semantic change. Instances of semantic change due to metaphor are easy to find in languages:

- English *star* meaning 'famous performer,' a metaphorical meaning from 'brilliant heavenly body.'
- Spanish *sierra* means both 'saw' and 'mountain range,' the latter being a metaphorical extension of meaning based on its indented shape.
- Latin *testa* 'pot' > French *tête* and Italian *testa*, both meaning 'head'; Middle High German *kopf* 'cup' > Modern German 'head.' This metaphorical transfer seems to be related to medieval soldiers' slang, in which battle was conceived as the smashing of pots.

Metaphorical extension of meaning of body-parts is very frequent.

- English *head* meaning 'ruler, leader,' as in *head of the department*;
- English *shoulder* meaning also the 'edge of the road';
- Latin *caput* 'head' > Spanish *cabo* which does not mean 'head' anymore, but it is kept only in figurative meanings, such as 'end, extremity,' 'cape,' or 'corporal.'
- Dyirbal *binda* both 'shoulder' and 'waterfall' (Dixon 1980: Chapter 10).

Another interesting domain in which metaphor has played a significant role is that of scientific and technical vocabulary. Nowadays, in European languages linguistic elements of Greek and Latin provenance are usually employed for coining new technical terms. However, if we go back to the sources of that vocabulary we can see that technical meanings originated by metaphor in many cases. For instance, the terms *case* and *conjugation* ultimately go back to Latin *cāsus* 'falling' and *coniugātiō* 'union' (from *con-* 'together' and a word from the same root as *iugum* 'yoke'). These are, in turn, loan translations (see section 4.3) of Greek *ptōsis* 'falling' (cf. *piptō* 'fall') and *suzugía* 'yoke (of animals), union' (cp. *suzeúgnūmi* 'yoke together'). This type of process can be found in other traditions, too. For example, Sanskrit *vyañjana* 'consonant' is derived from the root *vyañj-* 'anoint, adorn, decorate'—the underlying metaphor is that consonants 'decorate' vowels, which are the nucleus of the syllable.

In linguistic and literary studies some particular types of metaphor are given special names. In works on semantic change hyperbole or exaggeration and

litotes or understatement are usually mentioned. Hyperbole is frequently seen in the evolution of adverbs like *terribly*, *horribly* or *awfully* when used in expressions such as ‘I’m terribly exhausted,’ or the grammaticalized German *sehr* ‘very,’ whose original meaning was ‘painfully’ (cp. English *sore*). Hyperbole is also found in adjectives such as Spanish *soberbio* ‘superb’ (lit. ‘arrogant’) or colloquial Italian *mitico* ‘extraordinary’ (lit. ‘mythic’). As for litotes, it is, in fact, not so frequent in semantic change, but it does occur in some cases, as in *astonish*, from Vulgar Latin **extonāre* ‘leave (someone) thunderstruck’ or French *meurtre* ‘murder,’ originally ‘bruise’ (as in the verb *meurtrir* ‘bruise’).

We will be dealing with taboo and euphemism below (section 4.2.2), but it should be noted here that metaphors are frequently used to avoid direct mentioning of tabooed objects or beings.

2.1.2 Metonymy

As opposed to metaphor, metonymy is not based on a supposed or real similarity.⁵ Instead, the basis of metonymy (from Greek *metōnymía* ‘change of name’) lies in contiguity, whether this is physical or not. This contiguity may be of different types—container for the thing contained or vice versa, material for object, the time for what is done at that time, the place for what is usually located there or vice versa, effect for cause, and so on.⁶

Some examples of semantic change due to metonymy are the following:

- Latin *sexta* ‘sixth (hour)’ > Spanish *siesta* ‘nap’ (originally done at the sixth hour of the day).
- English *bead*, which originally meant ‘prayer’ but came to mean ‘bead’ because when using a rosary beads were used to keep track of the recited prayers.⁷
- Latin *arēna* ‘sand’ and also ‘circus’ (for the central sand area where the games took place).
- English *glass*, both the material and an object made of it. Similarly, Warrgamay *barri* ‘stone’ vs. Dyirbal *barri* ‘stone tomahawk’ (Dixon 1980: 118).
- Spanish *paella*, a special rice dish, took its name from the pan in which it was usually prepared (from Latin *patella*).

A special type of metonymy is synecdoche, which consists in referring to the whole by a part of it (*pars pro toto*). Some instances of this type of semantic evolution are the following:

- Mycenaean Greek (*h*)*ármo* ‘wheel’ vs. Homeric Greek *hárma* ‘chariot’; the same development must have taken place in Sanskrit *ratha* ‘chariot’ when compared to its Latin cognate *rota* ‘wheel.’

- Spanish *mañana* ‘morning’ and also ‘tomorrow,’ paralleled by Middle Japanese *asita* ‘tomorrow,’ from *ake-sita* ‘dawning time’ (Traugott and Dasher 2002: 55).
- Latin *vota* ‘vows’ > Spanish *boda* ‘marriage’ (as nuptial vows are a fundamental part of the ceremony); similarly, Polish *ślub* ‘vow’ and ‘marriage’

Koch (1999, 2001) has proposed a unified analysis of the various types of metonymy, which, in a cognitive perspective, could be accounted for as the result of a figure/ground effect inside the same frame. A metonymy would thus consist in highlighting one of the members of the whole frame due to its saliency. This figure/ground effect can be triggered either by the hearer or the speaker. Hearer-induced metonymies are those in which the hearer carries out a reanalysis of what figure is highlighted in a frame. In such cases no innovation is intended by the speaker, so the change only begins with the hearer’s reanalysis. Koch adduces Spanish *pregón* (from Latin *precō* ‘herald’) as an instance of this kind of evolution—from ‘herald’ it came to mean ‘announcement’ by a contiguity effect between salient members of a frame. Both interpretations were still possible in Old Spanish in contexts such as (2).

- (2) Por Castiella oyendo van los pregones . . . (Poema del Mío Cid 287)
‘Throughout Castile heralds/announcements can be heard . . .’

Instead, speaker-induced metonymies are due either to an ‘approximate’ use of a lexical item designating a contiguous concept (as in the case of Latin *coxa* ‘hip’ > Vulgar Latin ‘thigh’—French *cuisse* ‘thigh’) or to a rhetorical trope by which a speaker intentionally wants to add expressivity to his or her utterance.

2.1.3 Folk Etymology

Folk etymology plays an important role in morphological reshaping and in lexical modification, and it must be mentioned here in connection with semantic change—a synchronically unanalyzable word or expression is restructured, so that its form allows for a semantic connection with other lexical items in the same language. This is what has happened in well-known cases as English *asparagus* → *sparrow-grass* or *chaise lounge* (from *chaise longue* ‘long chair’).

2.1.4 Ellipsis

Ellipsis is the process by which part of a complex expression acquires the meaning of the whole. Some examples:

- English (now only American English) *fall* ‘autumn,’ from *fall of the leaves*.

- English *car* ‘cart’ > ‘automobile,’ from *motorcar*, once this type of cars became the usual ones.
- Spanish *hermano* ‘brother,’ from *frater germanus* ‘brother of the same father’
- Spanish *metro* ‘subway,’ truncation from *metropolitano* ‘metropolitan,’ itself an ellipsis for *ferrocarril metropolitano* ‘urban railroad.’

An interesting case study is provided by the Spanish word *váter* ‘toilet’ (from English *water*). It was used as a euphemism replacing previous words such as *retrete*, but it is itself a case of ellipsis, since its meaning originated in the expression *water closet*.

A similar process occurs when one of the members of a compound is given up, as in English *plane* meaning ‘airplane.’

2.2 Changes in the Scope of Meaning

Semantic changes can involve a variation in the scope of the meaning of a word. We can best conceptualize these changes as involving a modification of the range of referents that a given word can be applied to, i.e., in the number of objects or mental representations that it can refer to or its extension.

2.2.1 Broadening

Sometimes the meaning of a word broadens along time, i.e., a word comes to have a more general meaning than it used to. Broadening is also known as semantic extension or generalization. From a cognitive perspective, this means that one or more features of the prototypical instances of the word meaning stop being salient, so that the range of objects or mental representations to which the word can be applied becomes wider. In other words, broadening involves that the number of contexts in which a word may be used grows, while the information that it conveys gets smaller since it has lost specificity.

Some instances of this type of semantic change are the following:

- Latin *adripāre* ‘reach the shore (of a river)’ > French *arriver*, Italian *arrivare* both meaning just ‘arrive.’
- Old English *bridd* ‘young bird’ > Modern English *bird* (replacing in this sense Old English *fugol* > *fowl*, which underwent a process of narrowing; see section 2.2.2).
- Latin *passer* ‘sparrow’ > Spanish *pájaro* ‘bird.’
- Latin *panārium* ‘bread basket’ > French *panier* ‘basket.’

From a pragmatic perspective, it has been suggested (Horn 1984) that broadening is based on the implicatures derived from the R(elation) Principle: ‘Make

your contribution necessary. Say no more than you must'. It would thus be speaker-based—a salient exemplar of a wider class is employed to denote that wider class.

2.2.2 Narrowing

Narrowing, also known as semantic restriction, specialization or reduction, is the opposite to broadening—a word comes to have a more restricted meaning than it used to and the core instances of its meaning have to comply with a bigger number of salient traits. Thus, the number of contexts in which the word can be used is reduced, but it conveys more information since it gains specificity.

This can be seen in the following examples:

- Old English *hund* meant 'dog' (cp. German *Hund* 'dog'), while in Modern English *hound* refers only to a particular breed of dogs used in fox-hunting (see section 3.2.2).
- Old English *mete* 'food' > Modern English *meat*; similarly, French *viande* 'food' > 'meat.'
- Old English *steorfan* 'die' > Modern English *starve* 'die of hunger' (cp. German *sterben* 'die')
- Spanish *infante* 'child,' but especially 'king's son.' *Infanta* was created later as the feminine of *infante* in the restricted sense, and thus lacks the general meaning.
- Latin *soror* 'sister' > Spanish *sor* 'nun' (cp. French *soeur* 'sister'), replaced by *hermana* 'sister' (see above section 2.1.4).

Narrowing frequently occurs when a technical sense of a word develops and then the word is given up in its general meaning. This is also the case when a word with a general meaning is borrowed as a technical term into another language, such as German *Angst* 'fear,' vs. English *angst*, only used in psychology to refer to anxiety provoked by certain causes.

Interestingly enough, when new analogical forms are created and the old one is kept in the language, this typically shows a semantic restriction.⁸ Thus, when the new regular comparative *older* was created in English, the older form *elder* lost its general meaning and was kept as an adjective only in the expressions *elder brother/sister* or similar and as a substantive in specific uses in reference to an official position in some Christian churches. Something similar has happened with the former irregular past participles in Spanish—*tinto*, the former participle of *teñir* 'dye,' is now an adjective restricted in its current use to the expression *vino tinto* 'red wine,' while the new analogical form *teñido* is employed in all other occasions. As Hock (1986c: 299) remarks, such processes lead to the isolation of these originally metaphorical expressions and the reinterpretation of their meaning as the basic sense of the word.

A similar process may happen when a word loses its etymological transparency due to phonetic evolution. Middle English *hūswif* > *hussy* was replaced in its general meaning by the newly coined *housewife*, and it underwent a process of pejoration (see section 2.3.1).

From a pragmatic perspective, narrowing, at least in some cases, could ultimately rely on the Q(uality) Principle (Horn 1984): ‘Make your contribution sufficient. Say as much as you can,’ and would be hearer-based. Among the narrowing processes, a relevant one is that labeled by Horn ‘autohyponymy’—it is basically a semasiological process consisting in the reinterpretation of a superordinate term as a hyponym.

2.3 Changes in Connotational Meaning

Traditionally, when analyzing the meaning of a word, a distinction has been made between its denotational and connotational meanings. Denotation would be the ‘objective’ meaning of a word, while connotations are the subjective appreciations that the speakers link to the word. These subjective appreciations may become more salient than the denotative meaning, and can result in changes of meaning. Depending whether these are regarded as positive or negative by the community of speakers of a language, a change can be classified as melioration (also referred to as amelioration or elevation) or pejoration (also referred to as degeneration).

Melioration and pejoration can occur sporadically in individual use or in particular of groups and circles of speakers, but when the meanings that they give rise to enter current use, they constitute a valuable source of information in regard to the study of social attitudes and sociolinguistic history.

2.3.1 Pejoration

It seems that—revealingly enough—pejoration is more frequent than melioration in semantic change. Words are ‘promoted’ less easily than they acquire negative connotations diachronically. Pejoration is usually due to the fact that the word is linked to an unpleasant reality or to a socially undervalued concept or estate. It is thus usually related to taboo.

Some examples of this type of change:

- Old English *læwede* ‘non-clerical’ > Modern English *lewd* ‘coarse, vile’ (in this sense, attested from the fourteenth century onwards).
- Spanish *criado* ‘servant,’ originally the past participle of the verb *criar* ‘raise up,’ in reference to those people raised up at home but not belonging to the family.

Traditional misogyny has a reflection in semantic change by pejoration in cases as English *spinster* 'one who spins' > 'unmarried woman' or Old High German *diorna/thiorna* 'young girl' > Modern High German *Dirne* 'prostitute.' A similar development is found in Spanish *querida*, the feminine form of the adjective meaning 'dear' and also 'lover, mistress.'

A parallel semantic change leads in various languages from 'innocent' or 'good' to 'silly.' Middle English *selig* originally meant 'blessed, blissful' (cp. German *selig* with that meaning) and by extension came to mean 'innocent, helpless,' too. This meaning was reanalyzed as 'unconscious, unwary' and then 'stupid.' Classical Greek *agathós* used to mean 'good, noble' in reference to the character of a person, but Modern Greek *agathós* plainly means 'silly.' A similar evolution is found in French *crétin* 'stupid,' from Latin *christianus* 'Christian.'

2.3.2 Melioration

This type of change is found in instances like the following:

- English *nice* 'foolish' was borrowed from French *nice* 'silly, foolish' (ultimately from Latin *nescius* 'ignorant') in the thirteenth century and then evolved into 'fastidious' in the fourteenth century. It acquired positive connotations in the sixteenth century, when it meant 'precise, careful' and from the eighteenth century onwards, 'agreeable.'
- English *dude* used to mean 'fastidious man' in its first occurrences at the end of the nineteenth century and then just 'man.'

In past societies, melioration frequently has to do with offices held in the royal house, the state administration or in the army. A well-known instance is Old High German *marheskalk* 'servant (in charge) of mares' (from *marhe* 'mare' and *skalk* 'servant'), borrowed into French as *maresc(h)al(c)* > *maréchal* 'marshall.'

There are some interesting cases, like Old English *cniht*, meaning 'boy, youth,' but also 'servant,' like its German cognate *Knecht* 'servant' (cf. Spanish *chacha* 'female servant,' from *muchacha* 'girl')—the word thus underwent first a change by pejoration and then by melioration to become *knight* 'member of the lower nobility' when it was used to refer to military servants or followers of the king or a nobleman. Similarly, Old English *cwene*, which meant 'wife' and 'queen,' but also 'female servant' and 'prostitute,' and in the twentieth century also a 'male homosexual' (specially a feminine and showing-off one).

3. Semantic Change beyond the Word

Interesting though the change of meaning of individual words may be, it has to be borne in mind that words are not isolated in language, but related to

other words. The nature of such relationships is varied. Since Saussure it is customary to differentiate between paradigmatic and syntagmatic relationships. Syntagmatic relationships are those established between linguistic units that appear together in a context. Paradigmatic relationships are those linking linguistic units that are mutually exclusive in the same context—if singular third person *runs* appear in a sentence, then *run* cannot. Or in a language with nominal gender, such as Spanish, if masculine *bonito* ‘beautiful’ appears with a noun because it has masculine gender, then the feminine form *bonita* is automatically excluded. This division is useful for the classification of semantic changes due to relationship with other words.

3.1 Syntagmatic Changes

Standard treatments of semantic change rarely deal with syntagmatic changes that depend on the contexts in which a word is used. At most, ellipsis is mentioned (see section 2.1.4).

However, other processes of syntagmatic semantic change do occur. One of them is ‘contagion,’ by which the meaning of a word is transferred to another because they appear together frequently or in many contexts (Bréal 1897: chapter 21, Ullmann 1962). An outstanding instance of this type of change, as Ullmann remarked, is the history of negation in French—a certain number of words have acquired a negative meaning because they were usually employed with the negation, as seen in (3).

- | | |
|---|-----------------------------------|
| (3) Latin <i>passus</i> ‘step’ | <i>ne . . . pas</i> ‘not’ |
| Latin <i>rem</i> (Accusative of <i>res</i> ‘thing’) | <i>ne . . . rien</i> ‘nothing’ |
| Latin <i>personam</i> (Accusative of <i>persona</i> ‘person’) | <i>ne . . . personne</i> ‘nobody’ |

In colloquial French, in fact, *ne* is frequently omitted and it is just *pas* that conveys the negative value of a sentence. And in standard French *rien* and *personne* have negative meaning even if *ne* does not appear in the sentence, as in (4).

- (4) Qui est arrivé? Personne.
‘Who’s come? Nobody.’

3.2 Paradigmatic Changes

When studying this kind of changes, it is also useful to differentiate between changes due to similarity and contiguity (see section 2.1 for this difference in the mechanisms of semantic change).

3.2.1 Similarity in Form

Languages frequently show a tendency towards avoiding clashing homonyms, i.e., words having the same form but different meanings.⁹ An example usually mentioned when discussing these processes is that of Latin *cattus* ‘cat’ and *gallus* ‘rooster,’ which merged in Gascon French *gat*. The ambiguity resulting from this homonymy was highly inconvenient, especially in a farming context, so the meaning ‘rooster’ was given up in favor of other words: [azā] (originally ‘pheasant’), [begey] (originally ‘vicar’) and [put] (originally ‘chick’). Thus, two related semantic changes took place: (a) the word *gat* stopped meaning ‘rooster’; (b) the other words acquired this meaning by various processes—[put] underwent a semantic extension, [begey] a change by metaphor and [azā] a shift through a previous stage of polysemy or split.

A similar case is attested in the history of English—both Old English *lætan* ‘permit’ and *lettan* ‘stop, hinder’ evolved into Middle English *let*. This posed again an uncomfortable homonymy, given that the same word could have two opposite meanings. The meaning ‘stop, hinder’ was thus given up and other words were favored in this meaning.¹⁰

In some cases, a word comes to be homophone with another tabooed one (see section 4.2.2 below), and due to this formal identity it stops being used. For instance, in eighteenth-century English the word *ass* ‘donkey’ began to be avoided given its homophony with *arse/ass*, so that *donkey* has become the usual word for the animal, at least in American English.

In other cases, a kind of homonymic clash arises by a metaphorical extension—the new meaning is subject to taboo, with the final outcome that the word is avoided in all its senses. This is the case with *cock*, which by a common metaphorical transfer came to refer to the male sexual organ (cp. Spanish *polla* ‘hen’ and then ‘penis’), replaced in American English by *rooster* in reference to the animal. Something similar has happened with Spanish *huevos* ‘eggs,’ which is avoided in some areas of America since by metaphor it became a name for ‘testicles’; *blanquillos* ‘little white (things)’ is used instead. The verb *coger* ‘take’ is also not used in some areas because it has undergone a specialization of meaning and it is primarily employed in the sense of ‘having sexual intercourse,’ so that other synonyms like *tomar* ‘take, have’ or *agarrar* ‘catch’ are favored.

3.2.2 Similarity and Contiguity in Meaning

In the same way that we find ‘homonymophobia’ in language, there is a well-known tendency to avoid true synonymy—the ‘Avoid Synonymy’ principle (Kiparsky 1983, Clark 1993).¹¹ It is thus not difficult to find cases in which semantic change is triggered by this tendency. When synonymous lexemes appear in a language, either by internal evolution or by borrowing, they tend to be pragmatically differentiated and this can eventually induce semantic change.

In fact, some of the changes mentioned above (section 2.2.2) as instances of narrowing can be better understood if we widen our focus to cover more than individual words. For instance, when *dog* was borrowed into English from Norse, it was a synonym of *hound*; in the long run, however, the two words acquired differentiated meanings. Something similar has happened with *food* and *meat*.¹²

However, as Traugott (2004: 543) has remarked, the principle of synonymy-avoidance and the kind of realignment in meanings that it brings about is usually only part of a larger picture. It is the whole set of semantically related words that must be analyzed to achieve an appropriate understating of the changes involved. In this regard, she mentions Roberts' (2001) contribution, which surveys how the introduction in Middle English around 1200 of the Latinate forms in *rob-* (from Latin *robaria* 'robbery') provoked a semantic realignment of the predecessors of Modern English *steal*, *thief* and others in the following 300 years.

Although many handbooks and general introductions to semantic change do not deal with this question, to gain appropriate insight into the nature of semantic change the concept of 'semantic field' (or 'lexical field') is a key one. The pioneer work in this area was done by Trier (1931) on the field of intellect in Middle High German. Trier's analyses were historically based and his explanations attempted mainly to relate the changes in the organization of vocabulary with changes in society, in this case the end of feudalism.

We do not need to go into detailed criticism of Trier's work, because for current work on semantic change studies aiming at discovering general tendencies of change inside a semantic field have had more impact and have ultimately been the basis for proposals of generalization (see section 5.1). For instance, working from an anthropological perspective, Berlin and Kay (1969) surveyed color terms across languages. They reached the conclusion that the 'basic' color terms constitute a set of eleven perceptual foci for which there is a particular order of acquisition by children and in semantic development, as shown in Figure 16.1.

Similar approaches have also been made to the evolution of verbs of perception, as shown in Figure 16.2.

4. Causes of Semantic Change

In the previous sections we have analyzed how meanings change, but an important question to ask is why meanings change. Causes of language change in general are problematic (see Chapter 20 in this volume), but focusing now on semantic change, they can be classified into various groups (Meillet 1906, Ullmann 1962), linguistic and non-linguistic.

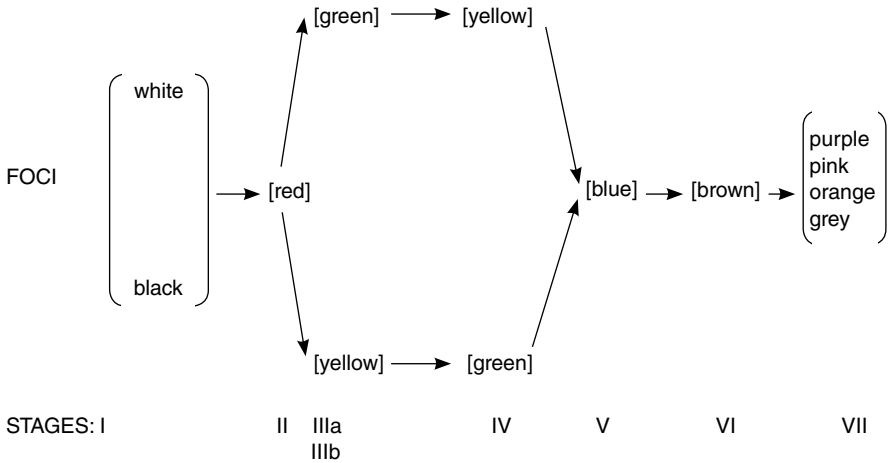


Figure 16.1 Development of color terms (Kay 1975: 257)

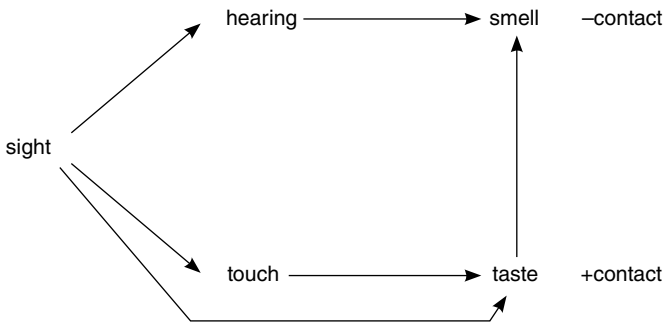


Figure 16.2 Extension of verbs of perception (Viberg 1985: 147)

Before going into briefly reviewing those causes, it will be convenient to deal with an interesting related question: how semantic change comes about. It is often assumed that processes of language transmission and language learning by children play a central role in grammatical change. It could thus be the case that they were crucial for semantic change, too—in the same way that children have to produce their own grammars through exposition to a limited number of actual utterances, they also have to re-create the link between phonetic words and meanings. This would lead to instances of semantic reanalysis, by which the referent intended by the speaker and that perceived by the hearer would be different.

This kind of processes cannot be neglected when trying to understand semantic change and scholars like Fortson (2003) are right in emphasizing children's role in semantic change. Fortson also remarks that it is usually taken for granted that the old and the new meanings of a word must be related, when semantic change due to reanalysis in children's learning would imply that the old meaning is just given up in favor of the new one, without any necessary period of polysemy.

However, this view is too reductionist and holding to it would amount to attributing all instances of semantic change to the process of language learning and considering all of them hearer-induced, while this is plainly not the case. In fact, semantic change can occur at an adult age and speakers of any language are bound to have experienced shifts of meaning of some words during their lifetime. Otherwise, they could not adapt to new realities. Furthermore, semantic change may arise from a conscious use. We analyzed above (section 2.1.2) hearer-based vs. speaker-based metonyms—if *all* semantic change were due to reanalysis, speaker-based metonyms or metaphors would not be possible. Reanalysis thus plays a role in semantic change, but it is not its only cause.¹³

4.1 Linguistic Causes

As we saw in previous paragraphs (sections 2.1.4 and 3.1), sometimes semantic change is language-induced. Ullman (1962) treated under this heading the phenomenon of contagion, to which ellipsis should also be added. In these cases, there does not seem to be any external motivation for semantic change—it is just linguistic mechanisms at work that provoke a reassignment of the meanings of words.

4.2 Non-linguistic Causes

Very frequently, causes of linguistic change are nonlinguistic. These causes can be broadly classified into three groups: historical, social and psychological causes.

4.2.1 Historical Causes

Semantic change can be brought about by a change in the referents of a word themselves. Words tend to be conservative in the sense that they usually remain in a language even if the reality that they refer to undergoes variations. A king in a contemporary democratic society has not the same functions as in earlier societies nor do institutions such as parliaments or courts; however, the same words are used for them. This also applies to objects or concepts and ideas—the

word *pen* (or Spanish *pluma* 'pen') has been kept even if bird pens have not been used for writing for a long time. So has *humor*, even if the physiological theory of the four humors was given up centuries ago.

4.2.2 Social and Psychological Causes

In a certain sense, every semantic change has a social base—individual innovations are being produced constantly, but they need to spread throughout the community if they are to stay in the language.

However, from a more specific perspective, words can acquire new or different meaning in specific social groups. Slang or technical languages are good examples of this type of processes. Those innovations can remain inside the original group of speakers or else expand to the whole community of speakers. French farming language provides a good instance of such processes, as shown by the semantic changes in (5).

- (5) Latin *cubāre* 'lie' > French *couver* 'sit on eggs'
- Latin *pōnere* 'put' > French *pondre* 'lay eggs'
- Latin *trahere* 'pull' > French *traire* 'milk'

One of the most important motivations for lexical and semantic change is taboo. Although Ullmann (1962) analyzed it among the psychological causes of semantic change, it is perhaps more appropriate to consider it from a social perspective. Even if taboo may have a psychological basis, it cannot be properly understood without paying attention to the social context. What is considered taboo varies across cultures, but there are some areas in which taboo appears to be more frequent, like physiological functions, sex and religion. It is interesting to note how the taboo is transferred from the object or activity to the words or expressions referring to them, so that these tend to be avoided.¹⁴

A good example is provided by the history of French. *Baiser* 'kiss' (from Latin *bāsiāre* 'kiss,' cf. Spanish *besar* and Italian *baciare* 'kiss') used to be a euphemism for having sexual intercourse; however, along time it came to be primarily used for this latter meaning, and was thus subject to taboo itself. As a result of that, *embrasser* 'embrace' has come to be used for 'kiss,' because *baiser* is avoided in all contexts. We saw similar examples of interference above (section 3.2.1).

Crowley (1992: 154) provides another quite interesting instance. In Bislama (the Melanesian Creole language of Vanuatu) English *milk* was borrowed and adapted as *melek*. However, it was also used with the meaning 'semen,' so that younger speakers of the language tend to avoid it, and when referring to plain milk they use the English word *milk* itself.

From the point of view of semantic change, it should be remarked that the tabooed word undergoes a process of pejoration (see section 2.3.1) the final outcome of which may be the loss of the word, but it usually does not change

its referent(s). It is the euphemism that usually does change its meaning, so that it comes to convey the meaning of the tabooed word, at least until the former euphemism is in turn subject to taboo and the process begins again.

Psychological and social factors also play a role in the development of figurative senses that eventually lead to changes by metaphor or metonymy (section 2.1). Speaker-induced processes originally have a psychological basis which allows for perceiving the similarity between objects and thus transferring the meaning. However, if those similarities are not perceived by the community of speakers they will be no more than sporadic individual uses without any further consequences.

4.3 Language Contact

Language contact is also a frequent cause of semantic change, in which both linguistic and nonlinguistic factors are involved. The degree to which a language can influence another varies depending on multiple factors, especially intensity of contact and the social status or prestige of the languages and their speakers (see Chapter 18 in this volume).

Borrowing is a source of lexical innovation and loanwords may provoke a restructuring of a semantic field (see section 3.2.2). Focusing now on change of meaning in words, we should differentiate again processes due to similarity in meaning from those due to similarity in form.

Through ‘calque’ or ‘loan translation’ a new meaning can be transferred to a word in a language because it shared a former meaning with a word from the other language. We saw an instance of this at the beginning of the chapter (section 1)—Spanish *ratón* has come to denote a computer device because English *mouse* had that meaning. This process is basically the equivalent at the lexico-semantic level of proportional analogy, as shown in (6).

$$(6) \begin{array}{l} \textit{mouse} = \textit{animal} \\ \textit{mouse} = \textit{computer device} \end{array} \quad \begin{array}{l} \textit{ratón} = \textit{animal} \\ ? \end{array} \left. \vphantom{\begin{array}{l} \textit{mouse} = \textit{animal} \\ \textit{mouse} = \textit{computer device} \end{array}} \right\} \longrightarrow \textit{ratón} = \textit{computer device}$$

Processes of calque also include the creation of new words or phrases in a language as a direct translation from another, as Spanish *rascacielos* (from *rascar* ‘scrape’ and *cielo* ‘sky’), based on English *skyscraper*.

In contrast to calques proper, other changes are due just to a phonetic similarity between words of two languages. When learning a foreign language we are warned to pay attention to so-called ‘false friends,’ i.e., words that look alike but have different meanings. Typical examples include English *constipate* vs. Spanish *constiparse* ‘get a cold.’ In contact situations, false friends may be the cause of interferences and give raise to new meanings of a word. For instance,

Spanish *carpeta* means ‘folder, file’ and it thus only superficially resembles English *carpet*. However, in United States Spanish *carpeta* is frequently used with the meaning ‘carpet.’

5. Towards a Deeper Understanding of Semantic Change

As opposed to phonetic change, which is usually thought of as being regular in essence, semantic change has been considered basically chaotic and fuzzy. However, the work done on semantic change in the past thirty years or so, basically connected with grammaticalization (see Chapter 15 in this volume), has provided interesting insights into the nature of semantic change.

5.1 Regularity and Directionality

By analyzing semantic change in languages of various families, we can discover some general tendencies. We already saw above (section 3.2.2) some proposals concerning the patterns of change inside certain semantic fields. Relying on the body of research on semantic change numerous other patterns could be enumerated, for instance (Campbell 2004: 269–272, Heine and Kuteva 2002):

- ‘alone’ > ‘only,’ as in English *alone*, German *allein*, Bulgarian *samó* or Spanish *solo*;
- animal names > inanimate objects, as in Spanish *gato* ‘cat’ > ‘jack (for raising cars)’ or English *crane* (both animal and machine).
- ‘arrive’ > ‘succeed,’ as in Mandarin Chinese *dào* ‘arrive’ (verb of motion) > *-dào* ‘manage to, succeed’ (ability marker) or Lahu *gà* ‘reach, arrive at’ > ‘manage to do’ (after a main verb);
- deontic modality > epistemic modality. This evolution is shown by English auxiliaries *must*, *should*, *will*, etc., which were used for deontic modality (as in *We must finish our work*) before being employed also for epistemic modality (as in *Anne is not here. She must be outside*).
- ‘know’ > ability. The evolution is shown by English *know* vs. *know how to*, Motu *diba* ‘know’ > ‘can, be able,’ Sango *hinga* ‘know’ (verb) > ‘can’ (ability marker), etc.
- spatial meaning > temporal meanings. This type of change is well documented in languages all over the world, as in Chinese *HOU* ‘behind’ > ‘after,’ Romanian *de* ‘from’ > ‘since,’ Maltese *minn* ‘from’ > ‘since,’ Albanian *për* ‘to’ (directional preposition) > ‘in, within’ (temporal preposition), Tamil *-il* ‘on, at’ (locative suffix) > ‘in, at’ (temporal suffix), and so on.

Furthermore, many of these tendencies can be subsumed under more general principles. For instance, it has been shown how semasiological change has a strong tendency towards more expressiveness, i.e., increase of subjectivity. Thus, Traugott (1982: 257) proposed that meaning change in grammaticalization processes is unidirectional and follows this path:

propositional > (textual >) expressive

Later Traugott (1989: 34–35; see also Traugott and Dasher 2002: 94–96) revised this hypothesis and reformulated it as a set of three related tendencies that may overlap:

- Tendency I: Meanings based in the external described situation > meanings based in the internal (evaluative/perceptual/cognitive) described situation. Examples: Old English *felan* ‘touch’ > ‘experience mentally’ or Old Greek *phobôûmai* ‘be put to flight’ > Modern Greek ‘fear.’
- Tendency II: Meanings based in the external or internal described situation > meanings based in the textual and metalinguistic situation. Examples: Old English *hwile* ‘time’ in the adverbial phrase *þa hwile þe* ‘the time that’ > temporal and concessive connective, or Old Japanese *sunawati* ‘(just at) the time (when . . .)’ (temporal nominal phrase) > Early Modern Japanese ‘immediately after, precisely, surely’ > Late Modern Japanese ‘namely’ (discourse connective).
- Tendency III: Meanings tend to become increasingly based in the speaker’s subjective belief/state/attitude toward the proposition. The above-mentioned examples of development of epistemic modality would fit here.

All these changes (and the more concrete ones just mentioned) must be envisaged as unidirectional, i.e., even if they are based on a semantic similarity or contiguity, semantic change appears to run only in one direction. In Sweetser’s (1990: 19) words, ‘viewing X as Y is not the same as, and does not imply, viewing Y as X.’

For instance, Traugott and Dasher (1987) have shown that physical domain verbs frequently evolve into speech-act or mental-state verbs. This is the case, e.g. with *grasp* ‘seize’ > ‘understand’ or *defend* (both physically and with arguments). This is explained by Sweetser (1990: 19–20) as the overlapping of two different systems of metaphors—both speech acts and mental states are conceived of in terms of travel through space, but speech acts are treated as an exchange or transfer of objects from one interlocutor to the other (conduit metaphor). The evolution thus is not reversible and cannot go in the other direction.

ABLATIVE	>	AGENT	>	PURPOSE	>	TIME	>	CONDITION	>	MANNER
ADLATIVE		COMITATIVE		INSTRUMENT				CAUSE		
LOCATIVE		BENEFACTIVE		DATIVE						
PERLATIVE		POSSESSIVE								

Figure 16.3 Abstraction scale according to Heine et al. (1991: 159)

The same happens with perception verbs—vision is knowledge (Sweetser 1990: chapter 2), but not the other way round.

Most of these changes are explained as going from more concrete to more abstract meanings and general abstraction scales have been proposed to explain directionality of semantic processes associated to grammaticalization (Figure 16.3).

5.2 Polysemy and Semantic Change

The contributions referred to in the previous section have been crucial for the understanding of the processes associated with semantic change. However, as Sweetser remarks:

What we would like to know is more about the connections between concrete and abstract domains (what makes space a good source for time vocabulary, for example?). The central point is thus knowing what is related to what in human meaning-structures and understanding the motivations for form-function mappings. (Sweetser 1990: 18)

In this regard, it is important to mention the development of the semantic map methodology in past years. Haspelmath has defined semantic maps in this way:

A semantic map is a geometrical representation of functions in ‘conceptual/semantic space’ that are linked by connecting lines and thus constitute a network. (Haspelmath 2003: 213)

One of the main advantages of semantic maps is that they allow for dealing with the problem of multifunctionality of grammatical morphemes without having to decide between monosemic and polysemic analyses (Haspelmath 2003: 211–213). Adding diachronic information to semantic maps provides the expected patterns of diachronic change, as exemplified in Figure 16.4.

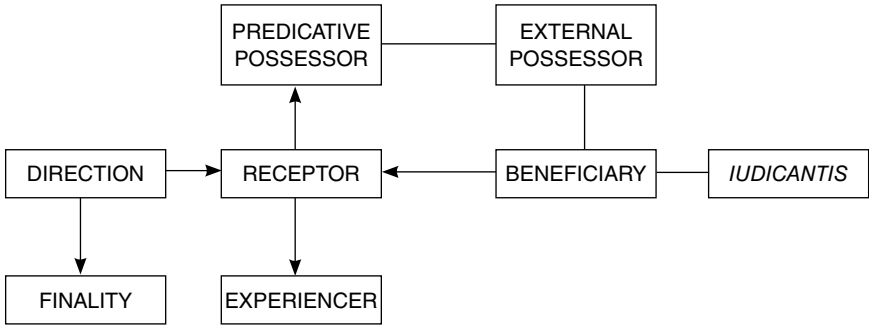


Figure 16.4 Semantic Map of 'Dative' (Haspelmath 1999)

Semantic maps allow for dealing simultaneously with language-specific multifunctionality and universal patterns, as reflected in Croft's (2001: 96) 'Semantic Map Connectivity Hypothesis': 'Any relevant language-specific and/or construction-specific category should map onto a *connected region* in conceptual space.'

According to Croft, the pattern of links in a map represents how grammatical categories are mapped onto conceptual space. The same reasoning should be valid for lexical categories mapped onto a conceptual space.

As reflected in Haspelmath's definition above and on Croft's remarks, semantic maps have been used mainly for the analysis of the multifunctionality of grammatical morphemes. However, they can also be applied to the analysis of the polysemy of lexical units and their diachronic evolution, since lexical items seem to behave in the same way (Haspelmath 2003: 237–238, Geeraerts 1997), as shown in some of the papers contributed to the collection edited by Cysouw et al. (forthcoming). For instance, Perrin (forthcoming) provides evidence of the recurring polysemy in adjectives expressing quality—the same word is employed both for 'young' and 'little,' 'hard' and 'solid' and so on.

It is generally assumed that a key process associated with grammaticalization is semantic bleaching or desemantization, i.e., loss of meaning in favor of grammatical function. However, Croft (2003: 262) remarks that the semantic change typical of grammaticalization processes can be best described, at least in its earlier stages, as a case of polysemy, which he defines as 'a chain of related meaning or uses.' Polysemy would thus make semantic change possible.

This seems to be true, but it should not be forgotten that polysemy itself basically arises by the mechanisms of semantic change that we saw above, metaphor and metonym (section 2.1). Explaining semantic change through polysemy would in the end only take the problem to an earlier stage—how did that

synchronic polysemy arise? An integrated synchronic and diachronic perspective seems to be in order to overcome these problems. Approaches to change in semantic fields like Berlin and Kay's on color or Viberg's on verbs of perception (section 3.2.2) can be easily reformulated in this way.

Semantic maps, as Haspelmath (2003: 232–233) remarks, embody a series of implicational universals, which emerge as a side effect of the elaboration of a map. In fact, they show interesting similarities to linguistic hierarchies. Both kinds of structures are based on implicative universals, but implicative hierarchies (such as the animacy hierarchy or the hierarchy of grammatical relations) do not rely on multifunctionality while semantic maps do. Semantic maps, however, have less force of prediction than hierarchies given that in a hierarchy a prediction concerns all its members above or below a certain one, while the bundle of semantic functions that a given morpheme can have must follow the lines of the semantic map, but limits cannot be predicted so neatly. Hierarchies thus allow for a lesser number of types of languages than semantic maps.

5.3 Pragmatics

Finally, the work on historical pragmatics in the past two decades or so has provided interesting insights into semantic change, too.¹⁵ Especially significant are the contributions from the perspective of 'diachronic pragmatics,' whose focus is on the interface between linguistic structure and use. Pragmatics can be regarded in this sense as 'non-literal meaning that arises in language use' (Traugott 2004: 539). This can be done both from a semasiological and onomasiological perspective. As formulated by Traugott, the two questions posed would be:

What are the constraints on ways in which a meaning can change while form remains constant (*modulo* independent phonological changes)? [. . .]
What constraints are there on recruitment of extant terms to express a semantic category? (Traugott 2004: 539)

As opposed to traditional approaches to semantic change, in which data were considered in isolation concerning specific linguistic units such as words or collocations, this new perspective involves paying attention to discourse pragmatic bases and motivation for semantic change.

In the past years Traugott (1999) and Traugott and Dasher (2002) have developed the 'invited inference theory' of semantic change. As Traugott explains:

The [Invited Inference Theory of Semantic Change] focuses on schemas that represent types of semasiological reanalysis that language-specific lexemes

may (but do not have to) undergo, constrained by larger cross-linguistic and onomasiological conceptual categories such as casual, conditional, future epistemic, animate, etc. It also focuses on the way in which stereotypes emerge [. . .]. (Traugott 2004: 552).

The path of evolution is thus the following:

Invited Inference → Generalized Invited Inference → Semantic Meaning

If we begin by an invited inference, this means by definition that it is not yet stereotypical. However, as the invited inference becomes more and more salient in the community of speakers and comes to be a generalized invited inference the stereotype is being created for the item with which it is associated.

This can be exemplified with the evolution of the expression *so/as long as* (Traugott and Dasher 2002: 36–38). In Old and Middle English it showed both the spatial and the temporal meaning ‘for the same length of time as.’ Only in certain contexts there was an invited inference of conditional ‘provided that.’ However, in Early Modern English the conditional invited inference was generalized to contexts in which the conditional was more salient, showing thus that it had become a generalized invited inference. In the nineteenth century it began to appear in contexts where the conditional was the only possible reading.

Notes

1. As it is well known, exceptions to this principle are words based on onomatopoeia or imitation by means of language of some sensory characteristic of the referent, as in English *cuckoo* or *gobble*. Ideophones, phonetic symbolism and the iconic value of reduplication as a means of expressing intensity or repetition would also fit here as exceptions to the principle of arbitrariness.
2. According to Geeraerts (1997: 25), ‘[i]n semantic change, the “encyclopedic” information is potentially just as important as the purely semantic “senses” (to the extent, i.e., that the distinction is to be maintained at all).’ A competing view is favored by Wierzbicka (1995: 311), who states: ‘Exploring the lexicon in a systematic and methodical way we can discover how “ordinary people” (in contrast to experts and scientists) conceptualize the world; and we can learn to discern the line which separates language-related everyday-knowledge from the language-independent specialist’s knowledge.’
3. An insightful critique of these traditional classifications can be found in McMahon (1994: 184–186).
4. See Koch (1999: 142–144) for a critical review of the development of this traditional distinction in four types of semantic changes, which arises from the intersection between two axes (contiguity/similarity and ideas/words) and the contributions made by Léonce Roudet and Roman Jakobson.
5. However, both metaphor and metonymy can be grouped together as producing new ‘figurative senses’ of a word. The difficulties of dealing with figurative meanings

become explicit when dealing with them in diachronic dictionaries—among various other problems (see Lara 1999), it is not easy to differentiate between purely contextual uses and new senses. These figurative meanings typically arise as peripheral senses and, unless they become stereotypical (see the invited inference approach in section 5.3 below), they are not stable in the language. Such figurative meanings are an instance of the ‘incidental, transient changes of word meaning’ that Geeraerts (1997: 23–25) explains as a result of the intersection between the extensional level of meaning and the nondiscreteness property of the phenomenon. This accounts for the phenomenon of ‘semantic polygenesis,’ i.e., the fact that the same meaning may arise independently in several occasions in the history of a word (Geeraerts 1997: 62–68), which is frequent with figurative senses.

6. Exhaustive lists of metonymic relations have been attempted in linguistic and literary studies, but none seems to have reached its goal—see Koch (2001) for a thorough revision of the concept of metonymy and its reformulation from a cognitive approach as based on a figure-ground effect in relation to prototypical frames and contiguity relations. Interesting papers on this subject can be found in the volume edited by Panther and Radden (1999). Instances of semantic change associated to the various types of metonymy can be found in Sihler (2000: 115–122).
7. The analysis of the semantic change that *bead* has undergone is a good case of how different analyses of the same phenomenon are possible—thus Hock (1986c: 296) gives it as an instance of semantic reinterpretation, while Campbell (2004: 256) considers it an example of metaphor (while metonymy is dealt with in another section).
8. This tendency is known as Kuryłowicz’s fourth law of analogy.
9. Synchronically it is not always easy to distinguish two homonyms from two different meanings of the same word (polysemy). From a diachronic perspective, homonyms were originally two different words that have come to have the same form, while polysemy arises in one word by semantic extension.
10. The tendency to avoid homonymic clashes is just the manifestation at the lexical level of the semiotic principle of ‘Morphological Transparency,’ according to which it is preferred that one form has just one meaning.
11. As with the tendency to avoid homonymy (see previous note), this is the particular manifestation at the lexical level of the semiotic principle of ‘Uniform Codification,’ according to which a meaning is uniform if it is conveyed only by one morpheme.
12. From a pragmatic perspective, Horn (1984) has provided interesting insights into cases of narrowing like these. It is usually the case that synchronically there is a ‘briefer and/or more lexicalized’ item and a ‘linguistically complex or more prolix’ expression. The former has an unmarked meaning and is used in stereotypical situations, while the latter is typically restricted to non-stereotypical situations, in which the use of the unmarked expression would not fit (Horn 1996: 314).
13. Traugott and Dasher (2002: 51–52) summarize the discussion of the role of children and adults in semantic change. From a pragmatic perspective, they stress that the type of changes that they are dealing with, those originating in invited reference (see section 5.3), cannot be initiated by children, ‘because of the complex inferences involved and the discourse functions in structuring text.’
14. A recent general treatment of taboo in language can be found in Allan and Burridge (2006).
15. A thorough review of historical pragmatics is out of the scope of this chapter. For a recent overview see Traugott (2004), on which the following paragraphs are based.

17

Etymology¹

Thomas Krisch

Chapter Overview

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1. Introduction

Due to limitations in space, this chapter can only give a very short introduction to the very complex and extremely interesting field of the study of etymology. I had to choose between a very cursory theoretical survey with a listing of all the things one has to take into consideration when making an etymology and a ‘practical approach,’ i.e. presenting etymology by ‘doing’ it. I chose a way in between, but this chapter is much nearer to the ‘practical’ approach.

2. Etymology in Past and Present

This section mainly deals with Plato’s dialogue *Kratylos* and tries to contrast Plato’s method with today’s approach. The main focus of our presentation lies on methodology.

Etymology deals with the origins of words. The English term ‘etymology’ is a learned loan from ancient Greek *etymología* ‘etymology’ and can be analyzed as Greek *étym-o-* ‘the true sense of a word’ + *-logía*, quasi-suffix denoting ‘science.’²

The origin of words has fascinated mankind ever since. In antiquity, Plato’s dialogue ‘*Kratylos*’ addresses this problem. In this dialogue, Socrates builds up some etymologies, mainly etymologies of names of gods and words which, as

he argues, stem from the barbarians. Among other examples, three etymologies are presented for the god of the sea, Poseidon, cf. (1)

(1) Pl. Cra. 402d–e:

I think now, the (name) of Poseidōn was given [by the first who applied it] because the power of the sea held him [scil. the one who gave the name to Poseidōn, TK] when he was walking and did not let him advance, but was like a bond (*desmós*) of the feet (*podōn*) for him. Now, he called the god who controls this power ‘Poseidon’ because he is (one) being a ‘foot-bond’ (*posí-desmo-*); The *e* [between *s* and *i*, TK] is inserted suitably because of appropriateness (*euprepeías héneka*). But I do not want to say this too quickly, rather, originally, one pronounced two *l*’s (*dýo lábda [sic!]*) instead of the *s* (*sigma*) because the god is much (*pollá*)—knowing (*eidótos*; Gen. of *eidōs* in an absolute construction, TK). Equally possible (*ísōs*) he may be called *ho seíōn* (the Shaker) from the shaking (*apò tou seíein*), added are the ‘*p*’ (*tò peî*) and the ‘*d*’ (*tò delta*).

2.1 Three Etymologies for the Name of the Greek God Poseidon in Classical Antiquity

In his first etymology in (1) Socrates uses the following interpretations and arguments:

- (a) He starts with semantics and interprets the name Poseidon as a compound (more exactly as a juxtaposition/case compound) *posí-desmo-* meaning ‘(one) being a bond for the feet’ [*posí* is the regular dat. pl. of the word for ‘foot,’ here in the function of a dativus incommodi], a word which was formed creatively by Plato (it is a ‘hapax legomenon,’ attested only here in Ancient Greek). Compounds with a dative as their first member were not unusual in Greek e.g. *nausí-pompos* ‘(one) being a guide for ships’ (dativus commodi); *ikhthysi-lēistēr* ‘fish-stealer’ (dativus respectūs) and in names (*khersi-dámas*, lit. ‘(someone) conquering with the hands,’ dativus instrumenti).
- (b) He looks for a motive for the naming (the sea acting as a bond for the feet).
- (c) He tries to give solutions for one of the phonological problems (insertion of *e* because of ‘appropriateness’), but he does not deal with a lot of other phonological and morphological details concerning the second part of the word.

In the second etymology in (1), a similar procedure is applied, but it is presented in reverse order, starting with phonology and ending with a motivation for the meaning.

As in the first etymology, there is no solution of all the phonological problems posed by this etymology. Furthermore, the stem-formation of *eidōs*, a participle of the perfect-present verb *oīda* 'I know,' does not contain any *n* after the *ō* (the genitive, the form actually appearing in the text, is *eidótos*), as would be expected for Poseidon.

In the third etymology in (1) the order of the procedure is similar to his first attempt:

- (a) Socrates starts again with semantics, this time taking a definite noun phrase 'the Shaker' as a starting point. In antiquity, god Poseidon was known as *enosí-khtōn* 'Shaker of the Earth'³ since Homeric times. Also, at least three synonyms of this epithet were in use: *e(n)nosí-gaios* 'shaker of the earth,' *seisi-khthōn* 'shaking the earth,' *gaiē-okhos* 'mover of the earth.'⁴ As in his second etymology, Socrates assumes a univerbation, this time of the article with the noun.
- (b) The phonological inconsistencies of this etymology are 'solved' by simply mentioning that 'p' and 'd' are added.

2.2 Methodological Comparison of Classical and Modern Approaches to Etymology

Let us consider what is in common between these approaches to an etymology of Poseidon and an approach which would be taken in the twenty-first century AD:

- (a) One still tries to explain 'opaque' words from parts which are better understood (cf. the above explanations by univerbations), but one does not restrict oneself to data from the same synchronic stage and dialect as Socrates does,⁵ one also takes into account other dialects, historical data and data taken from genetically related languages.
- (b) One still looks for solutions which are motivated from semantics and pragmatics (cf. the semantic and mythological explanations above which fit in with Poseidon as god and as part of mythology).

The big difference between Socrates' approach and a 'modern' etymology is that nowadays one tries to argue systematically in all strata, in phonology, in morphology and in semantics/pragmatics and also extra-linguistically in philology and culture. One also takes into account historical developments. If one

wants to be a productive and successful expert in etymology, one has to thoroughly study all the areas mentioned.

From today's perspective all of the phonological details of Socrates' etymologies turn out to be wrong, because they cannot be observed in a systematic way in Greek.

Research in the past 150 years has found out lots of regularities in languages and in their history (in the case of phonology there are the sound laws), and any etymology provided must 'fit' into the systematic picture drawn by linguists or one must find explanations for the things that contradict this research. Let us return to Socrates' first etymology. There is no rule in Greek which inserts an *e* (cf. the first etymology) between an *s* and a *d*. Furthermore, one would not accept a vague principle of 'appropriateness' as explanation, though this type of reasoning is still used in linguistics, but in rigid limits (e.g. concerning syllable structure). There are similar problems for the two other etymologies of Socrates. A rule which converts two *l*'s into one *s* does not exist elsewhere in the language and an addition of '*p*' and '*d*,' as proposed in the third etymology likewise is not supported elsewhere in the language.

Even in today's etymological research, one is sometimes forced to assume sporadic 'exrescence'⁶ of a consonant, especially at the end of a word, but one is not content just stating this 'exrescence' and one tries to find an explanation for it. If one compares Modern English *axe* with its cognate Modern High German *Axt* one must explain where the '*t*' in NHG *Axt* comes from. All the older stages of the Germanic languages (including OHG) lack the *t* (e.g. OHG *ackus*, OE *æces*, Gothic *aqizi*). This sporadic insertion of a stop word-finally is explained by Hock (1991: 124): 'At the end of an utterance, the organs of speech ordinarily return to their rest position. But occasionally, especially in emphatic speech, speakers may terminate their utterance more abruptly, by a sudden closure somewhere in the vocal tract.' Another example for this phenomenon is the informal pronunciation of NE *no* as [nəʊp].

Also the left edge of the word is a candidate for 'exrescence,' especially as an outcome of a misdivision of phrases. English *nickname* 'additional name' nowadays is not a transparent word any more. The original form was *ekename* (there are Middle English attestations cited in the OED s.v. *ekename* dating from the fourteenth and fifteenth centuries). The first part of this word, the noun *eke*, [e:kə] 'addition,' goes back to Old English *ēaca* 'addition' by regular sound developments. By the so-called 'Great English Vowel Shift' in the fifteenth century,⁷ the long *ē* in [e:kə] was raised to a long *ī* (this long *ī* subsequently was shortened before two consonants in the sixteenth century). The orthography /ck/ for the single consonant [k] is considered a pure writing convention.⁸ The form *nickname* with the additional initial *n* came into being by misdividing the indefinite article in the phrase *an ickname* into *a nickname*.⁹

Another way of accounting for ‘added’ sounds in the history of languages in today’s research strategies is to look for word-formation processes which enlarge word forms by adding suffixes. Thus, if one looks for an etymology of the French word for ‘sun,’ *soleil*, it seems clear that this word must have to do something with Latin *sol* ‘sun’ [cf. e.g. the Italian cognate *sole* which continues the Vulgar Latin (Italian variant) *casus generalis*, the accusative of lat *sol*, i.e. *sole(m)*]. One of the Old French forms for the ‘sun’ is Nom. *solelz* (the Gallo-Latin variant of Vulgar Latin still had a distinct form of the nominative ending in *-s* which developed a homorganic stop as a ‘Gleitlaut’ after a dental *l*, thence *-lz* [lts]¹⁰). This Old French form can be traced back to a diminutive **soliculus* [the asterisk * in front of a word marks it as a reconstruction] by applying regular phonological developments. The suffix *-culus*, fem. *-cula* is a Latin diminutive suffix (often with a hypocoristic meaning indicating informality and familiarity) which often shows a vowel *-i-* in front of it.¹¹ The diminutive has lost its hypocoristic meaning, a development similar to the development of Lat. *auricula* (hypocoristic diminutive of *auris* ‘ear’) into fr. *oreille* ‘ear,’ *agnellus* ‘little / dear lamb’ (from *agnus* ‘lamb’ with another Latin diminutive suffix, *-ellus*) > fr. *agneau* ‘lamb.’¹²

2.3 How to Distinguish between ‘Wrong’ and ‘Right’ Etymologies: The Word for ‘God’ in Greek and Latin

The methods of etymology were very similar to those of Plato from antiquity up to about 1800.¹³ It was therefore not surprising that etymology had a bad reputation. There is a famous dictum by Voltaire (eighteenth century) that has very often been cited:¹⁴

- (2) Voltaire, as is well known, defined etymology as a science in which vowels signify nothing at all, and consonants very little (Müller ([1861–1864] 1913))

In the nineteenth and twentieth centuries (starting with Jacob Grimm, Franz Bopp and Rasmus Rask) the comparative method based on strict morphological, phonological and lexical comparison was developed. The most important output of this research was the discovery of sound laws which mediate between cognate languages, their respective older stages and their common predecessors.¹⁵ This research in turn relies on ‘good’ etymologies of words that exemplify the sound laws and the regularities of word formation.

Wrong etymological cognates would point to wrong sound laws and have to be left out of consideration. Thus, it has been believed for a long time that

Greek *ἰεὺς* 'god' (cf. the NE loan *theology* 'science of God') and Latin *deus* 'God' (cf. the NE loan *deity*) would be etymological cognates (cf. the literature in Frisk (1973: 663)). There is no problem with the meaning here. But a Greek *ἰ* does not correspond regularly by 'sound law' to a Latin *d*. One discovered that the normal correspondence is Greek *ἰ* : Latin *f* (cf. Gr. *ἰῦμός* 'spirit, courage, strong passion' — Lat. *fūmus* 'smoke, fumes'; Gr. *ἰέκε* '(s)he set (preterit)' — Lat. *fēcit* (/fe:kit/) '(s)he made'; Gr. *ἰύρα* 'door' — Lat. *fores* 'doors'). If one looks at Greek *ἰεὺς* more closely inside Ancient Greek, one discovers the compounds *ἰέσκελος* 'wonderful'¹⁶ and *ἰέσπῆατος* 'proclaimed by a god/divine law',¹⁷ where the division-line between the first and the second part of the compound lies between *ἰέσ* and the following consonant.¹⁸ Thus, in the compounds, the *-s* marks the end of the compound stem of the word for 'god.' This is a strong point for assuming that *ἰέσ-* represents a *s*-stem and not a root since compounds with pure roots in the first member are extremely rare in ancient IE languages.¹⁹ The final *-s* in *ἰεὺς* marks the nominative singular ending of an *-o-* stem and not a stem. In Greek sometimes stems are enlarged by the *-o-* ('thematization') and therefore transferred into the *-o-* declension.²⁰ Consequently the pre-Greek²¹ form of *ἰεὺς* must have been **ἰέσ-ό-s* (the stem **ἰέσ-^o* can either continue PIE (=Proto-Indo-European) **d^hes-^{o22}* or **d^hh₁s-²³* the Latin cognates and the type of the compound²⁴ point to the second form). A well-known sound-law in Greek accounts for the loss of the *-s-* in intervocalic position, giving *ἰεὺς*. The Latin cognates of the Greek word *ἰεὺς* are *fās* 'divine law, divine order' (< PIE Tr. *d^hh₁s*),²⁵ *fānum* 'piece of consecrated ground, temple' (< PIE Tr. **d^hh₁s-no-*)²⁶ and (*diēs*) *fēstus* 'festival-day, holiday' (< PIE Tr. **d^heh₁s-to*).²⁷

PIE **d^hh₁s-* could reflect a very old *s*-stem from the well-attested root **d^heh₁-* 'to set, to place' (present in English *do*, German *tun* 'do,' Latin *facere* 'to do,' Greek *τίθημι* 'I set,' Sanskrit *dadāmi* 'I set'). This *s*-stem probably denoted a *nomen rei actae* with a religiously specialized abstract (metaphoric) meaning 'something sacred placed/established' (i.e. the divine law). Lat. *fās* 'divine law' (an indeclinable neuter) represents the direct continuation of this word. Lat. *fānum* stems from **d^hh₁s-no-* with an old **no-* Suffix denoting 'provided with' (cf. e.g. Wackernagel and Debrunner (1954: 734)) lit. 'something provided with divine law'; (*diēs*) *fēstus* would be **d^heh₁s-to-* with about the same meaning (cf. e.g. Leumann (1977: 333–335) for denominal **-to-* in Latin) '(day) provided with divine law' (at these days the gods were venerated). And a 'god' (*ἰεὺς*) in ancient Greek would be 'someone characterized by divine law.'

The Latin word for 'god,' *deus*, has widespread cognates in other IE languages (e.g. Sanskrit *devás*, OIr. *dīa*, lit. *diēvas*, all meaning 'G/god'), all going back to PIE **deḡu-o-s* 'god.' Greek continues this word only in an adjective derived from it, PIE **diu̯ios* > Gr. *διός* 'heavenly.'²⁸ Ultimately, the commonly accepted etymology of **deḡu-o-s* is 'belonging to the sky,' and is derived from a PIE word for 'heaven, (day)light,' **diu̯-s* / Gen. **diu̯-os* (present in the name of the Greek

father of the gods, Zeus, and in the first part of the name of the same God in Latin, *Iupiter*) by a regular process called 'Vṛddhi.'²⁹

2.4 Poseidon: The 'Right' Etymology

Let us now return to the etymology of 'Poseidon' mentioned above. What is the 'right etymology' of this word according to today's state of reasoning? In his interesting book about the mysteries of Eleusis, Janda (2000: 256–258) discusses 'Poseidon' in the context of considerations about Poseidon's wife, Demeter. Janda discusses the literature, which has brought up a number of suggestions,³⁰ and he supports the etymology starting from the Greek dialectal (Doric) variant of Poseidon, *Poteidās*, interpreting it as the fossilization of a vocative syntagm IE **potej dah₂s* 'oh lord of the water,' the first word of which is the regular vocative of **pot-i-* 'lord' (cf. Gr. *pósis*, Sanskrit *pāti-*)³¹ and the second word can be seen as the original genitive singular (ending *-s) to a noun PIE **dah₂-* 'water' [continued with an additional suffix in Sanskrit *dānu-* 'river' and also in names of rivers like *Danube* (< *Danuvius*) and *Don*]. The syntagm **Potej dās* appeared so frequently that the final -s was reinterpreted as a stem formant³² and could be enlarged by another suffix containing *n* which had an individualizing function giving the more common form **Potejdāsōn* (by regular development >Homeric Greek *Poseidáōn*; > Attic Greek *Poseidōn*).

3. What is Etymology?

3.1 The Definition

We adopt Untermann's definition (my translation):

- (3) For me, etymology is defined as: establishing and describing the process which produces a new sequence of phonemes and assigns a meaning to it, using given vocabulary and given grammatical means, in order to meet a requirement which emerges. (Untermann (1975: 105))

Untermann's definition accounts for the method applied in section 2 (especially 2.3 and 2.4 above): One tries to go back in time until one reaches the state in which the formation of the word is most transparent so that the process by which it was formed can be reconstructed with as much certainty as possible. In section 2 we already saw some examples for etymologies that go back far in time:

- (a) The name of Poseidon was traced back to a syntagm 'Oh lord of the water' which came down to Pre-Greek (still preserved in Doric). This is

the description of the process which produces a new sequence of phonemes (see (3)). This form was enlarged by a suffix in Homeric Greek (= use of given grammatical means in (3)). Evidently the naming of the god met a requirement: PIE was not spoken near the sea (probably it was spoken in southern Russia), and the name of a new god of the sea was needed.

- (b) The Greek word for 'god,' *t^heós*, was traced back to **t^hesos* by internal reconstruction. The etymology of Pre-Greek **thesos* was shown to be the thematization with an *-o-* of an inherited word *t^hes-* 'divine law' (part of compounds in Greek) and loss of the *s* in intervocalic position. This is the description of the process which produces a new sequence of phonemes with given grammatical means, cf. (3). The meaning at the time the word for 'god,' *t^heós*, was formed in Greek was: 'someone characterized by divine law.' It is hard to speculate about the motive why the Greek gave up the PIE word for 'god,' **deǵuos* and which requirement was met by the new word, banning the old word to *dīos* 'heavenly,' a derivative in adjectival function. Probably an original typical 'epithet' (i.e. an adjective/appositive noun that is used to express the characteristic of a person/thing etc.) of the word for 'god,' meaning 'characterized by divine law,' came to be the main meaning. A comparable process created the German word *Illustrierte* which now denotes a journal with illustrations. This word was originally an adjective in the phrase *illustrierte Zeitung* 'illustrated journal.'³³

3.2 Examples for Etymologies: Podcasting, Penthouse, Bear, Wine, Street, Creed

Of course, etymology is not restricted to 'old' formations. Every word has its etymology, also recent formations. Take the English word *podcasting* (attested since 2004) which means 'the making available of a digital recording of a radio broadcast or similar item on the internet for downloading to a personal audio player or a computer.'³⁴ In this newly created word the first member of the compound, *pod-* (normal NE meaning 'receptacle, a place to keep things') is shortened from the brand name *iPod* (*i* stands for 'internet') for a portable media player which can store songs taken from computers/from the internet, issued in 2001 by Apple Inc.³⁵ The second member, *-casting* (normal NE meaning 'throw') is taken from the metaphoric meaning 'throwing (sound) waves widely'³⁶ it has in NE *broadcasting*. In fact, the whole formation is an example for the word formation process of 'blending,' the fusion of words. (*iPod* and *broadcasting* were fused into one word). This type of process is especially popular in English, cf.

e.g. *brunch* (*br[eakfast] X [l]unch*), *smog* (*sm[oke] X [f]og*) etc.³⁷ The need for finding a word denoting the concept of *podcasting* is evident since the ‘thing’ came into being and needed to be named.

Sometimes the motive for creating a new word out of old material is the striving for transparency. This is called ‘folk etymology’³⁸ whereby the arbitrariness of the linguistic sign is ignored by the speakers and a more transparent word is read into an existent word, most of the time with material that is phonologically similar to the original word. This happens very often with borrowings from other languages. Thus, English *penthouse* has no original connection with *house*. Its earliest attested forms in Middle English (Me.) are *pentiz*, *pentize*, *pendiz*, and others (coming as a loan from Old French *apentis* ‘attached building’,³⁹ ultimately coming from Vulgar Latin/Middle Latin *appendicium* ‘additional part’). The OED (s.v. *penthouse*) defines its middle English meaning as ‘a subsidiary structure attached to the wall of a main building and serving as a shelter, a porch, a shed, an outhouse, etc. . . . having a sloping roof’ and gives many examples starting with the early fourteenth century. Since the stress was on the first syllable, the end of the word could be pronounced similar to the unstressed variant of *-house* as second member of compounds. Already in the sixteenth century, the folk etymology *penthouse* emerged. Today’s meaning ‘(luxurious) flat on top of a tall block’ (Ayto (2005: 373)) is a meliorization process of semantic change, cf. also section 2.3. of Chapter 16 on semantic change (this volume).

Sometimes, the motive for a new usage of a word is driven by taboo. One wants to keep away dangerous things and uses code names for it. In ancient times, e.g. wild animals like bears were named ‘the brown one’ (as in the Germanic ancestors of English *bear*, German *Bär*) or ‘honey-eater’ (as in Russian *medved*), in modern times dangerous diseases are coined with euphemisms. Thus, in obituaries and death notices, expressions like *died after a prolonged illness* are used to avoid the taboo word *cancer*.⁴⁰

As we have just seen with *penthouse*, a very important aspect which one always has to bear in mind when looking for an etymology of a specific word is borrowing from one language into another. Here the motivation is mainly a cultural one: The word enters a language together with the thing denoted or the abstract concept introduced by speakers of the other language. The Germanic languages, among them English and German, borrowed the word *anchor* from Latin *ancora* ‘anchor’⁴¹ together with the thing (before that the Germanic people used stones for that purpose). The word *wine* was taken from Latin *vīnum* (before that the Germanic tribes mainly drank beer). The Romans who were great planners of infrastructure also introduced the word and the construction principle of *street* into the Germanic area (< Lat. (via) *strāta*

‘paved (way)’). The concept of *creed* is a loan from Christian Latin *crēdō* ‘I believe.’

Notes

1. Thanks to Christina Katsikadeli, Thomas Lindner, Stefan Niederreiter and Ioannis Fykiaris for useful comments on the text. There exist a number of books which present the subject more systematically than this chapter. In particular, the author can recommend Seebold (1981) and Liberman (2005). Useful books include Ross (1969) and Birkhan (1985). The article by Hoffmann and Tichy (1980) (reprinted in 1992), which was translated into English by de Vaan (2006), offers a comprehensive checklist which helps to establish and to evaluate etymological proposals. A very useful survey of folk etymology can be found in Panagl (2005). When a new etymology is proposed, this can have consequences for a number of further etymologies. This is shown in Krisch (1990). Several English etymologies are discussed in detail in Lindner (1995).
2. Actually, Greek *-logia* in Gr. *etymología* is an abstract noun formed to an agent noun *-lógos* ‘scientist.’ This agent noun appears as second part of compounds and denotes ‘someone who deals with the science named in the first part of the compound.’ *Etymología* ‘etymology’ thus denotes what the etymologist, the *etymológos* is dealing with, originally everything concerning the true sense of words.
3. He was the god of the earthquakes, cf. e.g. the Orphian prayer Orph. H. 17, 9 *hédrana gēs sózois* ‘you may keep intact the dwellings of the earth.’ The meaning of the first part of the compound is ‘to set into movement,’ cf. Janda (2000: 257).
4. The Mycenaean Greek form *e-no-si-da-o-ne* (dative) contains as first element the verbal element *e-no-si-* ‘moving’ and as second element a word either meaning ‘earth’ or ‘water,’ see below in the text.
5. In Cratylos, the borrowing of foreign words is also taken into consideration, cf. Pl. Crat. 409 d, e: ‘I think that the Greeks took many words from the barbarians, especially those dwelling under (the rule of) the barbarians.’
6. Cf. Hock (1991: 124).
7. Cf. the good overview of the processes of vowel shift in Hock and Joseph (1996: 137–138).
8. Cf. e.g. Pinsker (1974: 92). This book is especially useful as a quick reference book for sound changes in the history of English.
9. One can find more examples for such subdivisions e.g. in Liberman (2005: 99–100).
10. Cf. Riefelder (1976: 241).
11. E.g. *ēnsi-culus* ‘small sword’ formed on *ēnsis*, Gen. *ēnsis* ‘sword,’ Lat. *anaticula* ‘duckling’ from *anas*, Gen. *anatis* ‘duck,’ *articulus* ‘little limb, joint’ from *artus* Gen. *artūs* ‘limb’; *versiculus* ‘little line’ from *versus*, Gen. *versūs* ‘line’; likewise a **soliculus* from *sol*, Gen. *solis*, though unattested in Latin, is a potential diminutive form.
12. This type of emotional ‘loading’ of a form with subsequent semantic bleaching is a well-known process in language history and appears very frequently with diminutives. In some languages the subsequent application of this process (emotional ‘loading’ – semantic bleaching – emotional ‘reloading’) leads to a culmination of diminutive suffixes in one word; Senn (1966: 332) lists a number of examples for this in Lithuanian, e.g. the word for ‘father,’ lith. *tėvas* ‘father’: *tėvelėlis* (-ėlis + -ėlis), *tėvelaitis* (-ėlis + -aitis); *tėvaitukas* (-aitis + -ukas) etc. Paul (1975: 163) mentions German examples for this phenomenon, e.g. *Ring-el-chen* ‘little ring’ with two diminutive suffixes added to *Ring* ‘ring.’

13. Cf. e.g. Petersen (1992: 13). A more comprehensive survey of the history of etymology up to 1800 can be found in Willer (2003). For the history of etymology in the nineteenth and twentieth centuries cf. Malkiel (1993).
14. The exact original source for this famous utterance of Voltaire is difficult to find. Cf. the added note (dated 2008) by Noordegraf to an older publication of his (Noordegraaf (1997)) accessible through the internet: (<http://dare.ubv.uu.nl/bitstream/1871/12712/1/VVVOLTAIRE.pdf>, accessed on 6 May 2009).
15. For example between the Germanic languages such as English, German, Swedish etc., their historically attested precursors Old English, Old High German and Old Norse and their (reconstructed) predecessor Proto-Germanic; between the languages Tongan, Samoan, Rarotongan, Hawaiian and their reconstructed predecessor Proto-Polynesian etc. etc.
16. Lit. 'driven by a god/divine law' from t^hes- 'god, divine law' + a derivative of $kéloomai$ 'drive, urge.'
17. From t^hes- 'god, divine law' + a derivative of $p^hēmi$ 'say.'
18. Cf. the preceding footnotes.
19. Compounds of this rare type often show assimilation between the members of the compound rendering the interpretation of the first member opaque, cf. e.g. Lat. *pelluviae* 'water in which the feet are washed' < $*ped-luviae$, cf. *ped-* 'foot'; Greek: *aipólos* (< $*aig-pólos$) 'goatherd,' cf. *aig-* 'goat.'
20. Cf. Risch (1974: 13). Unfortunately I could not find a further example for an *s*-stem transferred into an *-o-* stem.
21. This form, as we have shown, is reached by comparing synchronic Greek data. This method is called 'internal reconstruction.'
22. The sign $^{\circ}$ indicates that the researcher does not want to continue the reconstruction either because the continuation of the form is unnecessary for the point in question or because there are problems which (s)he does not want to talk about. In this case it is not possible to reconstruct the whole word for PIE because Greek is the only language with a thematic (*-o-*) formation. Greek t^h continues PIE d^h as we have seen earlier.
23. The sign $*h_1$ stands for a laryngeal sound with the tongue formed to pronounce an *e*. In Greek, the continuation of $*h_1$ between consonants is 'e,' cf. e.g. Rix (1976: 71). For our reconstruction cf. also Mallory and Adams (1997: 231).
24. This type is formed with the weakest ablaut grade (absence of the vowel *e/o* in the root and in the suffix) in the first member of the compound. Another example for this type is the name of the god of the Zoroastrians in the Avesta, *Mazdā-* (*Ahura*), lit. 'the (lord), (who is) putting (everything) into (his) mind'; *mazdā-* < $*mąs-d^heh_1-$ (cf. e.g. Hoffmann and Forssman (2004: 124)), the first part of which is an *s*-stem $*mąs-$ (cf. Gr. *ménos-* 'mind' with full ablaut grades *e* in the root and *o* in the suffix) like our $*d^heh_1s-$. The second part, $*d^heh_1-$ is the PIE verbal root for 'to put.'
25. The abbreviation Tr. stands for 'transponatum' (transposed form). This term means a reconstructed form reached at by regular historical developments observed elsewhere without being a reconstruction in the strict sense (a true reconstruction is based on directly attested cognates of a particular word). Latin develops $*h_1$ into the vowel *a* between consonants ($*d^heh_1s >$ Lat. *fas*), cf. Schrijver (1991: 90–94). Subsequently, the *a* is lengthened, a regular development in Latin monosyllabic words; cf. Ernout and Meillet (1967: 217).
26. There is compensatory lengthening of a vowel before the group *sn* in Latin (cf. e.g. Leumann (1977: 206).
27. When appearing in the coda of a syllable, $*h_1$ lengthens a vowel which precedes it.
28. The lengthening of the *i* in Greek is a compensatory lengthening effected by the loss of 'u' (cf. e.g. Lejeune (1982: 171).

29. If you put it in a simplified way (and applied to this example), a vrddhi-formation takes the 'weak' stem-form of the genitive **di-*, adds an *e* in front of the *i* (and thus creates a new full grade of the ablaut, cf. also notes 25, 32) and adds a thematic vowel *-o-* as stem forming element at the end of the word. Cf. also Darms (1978: 377–380). The semantics of vrddhi is 'belonging to.'
30. Cf. e.g. Ruijgh (1991) for a discussion. Ruijgh was the first to take the Mycenaean adjectival derivative of Poseidon, *po-si-da-i-jo*, into consideration.
31. The vocative singular in PIE uses the 'full grade' of the ablaut (presence of an *e*) in the stem-characterizing suffix *-i-*, which is *-e_i* and a zero ending, thus giving **pote_i*.
32. Also the writing of a hiatus between the *a* and the *o* in the Mycenaean texts of the theonym of Poseidon, *po-se-da-o*, to be read as /posejdāhōn/ points to an original *s* in between (which developed to *h* in Mycenaean and then to zero between vowels in Greek); cf. e.g. Bartoněk (2003: 419).
33. Another example for this phenomenon is the English nominalization of the adjective *equal* in phrases like *she is his equal* with the omitted noun *rank*. Until 2002 when the Euro was introduced, the currency of the Netherlands was the *gulden* 'guilder,' originally an adjective meaning 'golden' with an omitted noun meaning 'coin.' Cf. also Latin (*via*) *strata* 'paved (way)' discussed below.
34. Cf. Ayto (2007: 241).
35. Vinnie Chieco, who branded the name, is said to have thought about the phrase 'Open the pod bay door, Hal!' in the science fiction film '2001: A Space Odyssey.' This refers to the white EVA (extra vehicular activity) Pods of the 'Discovery One' spaceship (cf. the URL http://en.wikipedia.org/wiki/IPod#cite_note-straight-4, accessed 6 May 2009). These pods are small, you can do investigations with them outside the big mother- spaceship but you have to return to the spaceship as soon as you need fuel or food. ('Hal' is the name of a computer; if you add a letter in the alphabet to each of the letters of 'Hal' you get the name of the computer company 'IBM').
36. The original meaning of this word before the radio came up in the 1920s was 'throwing seeds widely.'
37. Cf. Liberman (2005: 102–105) for more examples. Of course also examples from other languages exist, cf. e.g. the very informative chapter 8 'Kontamination' in Paul (1975).
38. The English term is a loan translation from the German term 'Volksetymologie.' An alternative English term is 'popular etymology.'
39. The loss of anlauting *a-* in English already in the earliest attestations of the word could be explained as seeing the indefinite article in it (misdivision).
40. Cf. Allan and Burridge (2006: 220).
41. Latin, in turn, took the word from Ancient Greek *ánkōra*.

Part VI

EXPLANATIONS OF LANGUAGE CHANGE

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18 Language Contact

Bridget Drinka

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1. Introduction

The study of languages in contact, once relegated to the periphery of linguistic inquiry, has recently come to be recognized as a subdiscipline with robust explanatory power, positioned as it is between two disciplines of historical and sociolinguistics, and firmly linked as it is to empirical methodology. A brief synopsis of early work in this field will demonstrate how several of the key concepts and trends were introduced, and how they have helped shape ensuing research.

Johannes Schmidt's renowned Wellentheorie (Wave Theory) (1872), an early response to Schleicher's Stammbaumtheorie (Family Tree Theory) (1860), depicted innovation as moving across a landscape, from dialect to dialect, much like waves emanating from a central point in a pool, and was therefore one of the first models of language change to represent contact as significant. Hugo Schuchardt recognized the importance of contact at a time when the Neogrammarians were largely ignoring its operation;¹ his studies of languages in contact in West Africa, Ceylon (Sri Lanka), the Philippines and elsewhere initiated, in fact, the study of pidgins and creoles (1883, 1884). Kristian Sandfeld's 1930 classic 'Linguistique balkanique' documented the spread of various linguistic features in the Balkans, and accounted for many of the innovations as

due to the direct or indirect influence of Greek.² In Italy, 'Neolinguisti' like Matteo Bartoli likewise focused upon the geographical distribution of innovations, expanding upon the explanatory role of centrality and peripherality and insisting that social motivations were responsible for the spread of innovations from one variety to another (Bartoli 1925: 38).³ In his analysis of the languages of the Pacific Northwest, Franz Boas (1938) studied the diffusion of phonological and morphosyntactic features across a number of unrelated languages, pointing out that cultural innovations could spread across linguistic and ethnic borders without impediment. Roman Jakobson (1944: 193) expanded upon this view according to the precepts of the Prague School, stating that linguistic differences in no way hindered the diffusion of phonemic or grammatical structures.

The first systematic and comprehensive study devoted to linguistic contact per se appeared in 1953 in the form of Uriel Weinreich's groundbreaking work, *Languages in Contact*. The book begins with the simple yet profound observation that the locus of contact exists within the bilingual and multilingual users of languages.⁴ Weinreich claims that the mechanisms of interference operate in similar fashion whether between languages, dialects or varieties of one dialect,⁵ and states that

[a] full account of interference in a language-contact situation, including the diffusion, persistence, and evanescence of a particular interference phenomenon, is possible only if the extra-linguistic factors are considered. (Weinreich 1953: 3)

Weinreich presents a wealth of examples to illustrate these socially motivated influences, from the phonological merger of /l/ and /l'/ in fashionable urban Czech in imitation of German (1953: 25), to the morphosyntactic reinterpretation of Finnish *epä*, the present participle of the verb of negation, to mean 'non-', replicating Swedish *om-*, *on-* (1953: 40), to the complex lexical splitting of the Yiddish verb for 'dream' into two verbs (original *xólemen* and German loanword *trójmen* < *träumen*), based upon the bipartite model of Polish (*śnić* 'to dream in one's sleep' vs. *marzyć* 'to fancy') (1953: 59). Weinreich points out that contact can be so extensive that a language may even adopt a different structural type, as appears to have occurred in the partial Indo-Europeanization of modern Hebrew (1953: 42). He examines the sociocultural parameters which affect linguistic congruence—geographical factors, ethnicity, religion, etc.—and points to the variable roles of standardization and language loyalty. He goes on to demonstrate the correlation between nonlinguistic phenomena and language shift, as illustrated, e.g., by the shift from German to Portuguese by immigrants to Brazil.⁶ With these and other meticulously documented details and insightful

observations about the sociocultural motivation of change due to contact, Weinreich can be said to have launched modern contact linguistics as a discipline.

In the 1970s, Peter Trudgill adopted the methodology of demographers and geographers in order to analyze the diffusion of linguistic innovations as they spread from one variety to another; he proposed the 'Gravity Model' to account for his incisive observation that innovations tended to hop from one large urban center to the next largest, skipping over the intervening countryside. As his example of the diffusion of the uvular /r/ from Paris to Cologne, Berlin, Copenhagen and Turin illustrates (1983: 58), these innovative hops could easily cross language boundaries, bringing features of one language into another.

It was the publication of Thomason and Kaufman's 'Language Contact, Creolization, and Genetic Linguistics' in 1988 which served as a catalyst for the healthy growth in number and quality of studies on linguistic contact that has taken place in recent years: this work laid down the foundation for virtually all modern scholarship on contact linguistics. Thomason and Kaufman's claims concerning the operation of contact continue to generate debate and controversy. For example, one of their most provocative, and important, claims is that it is social factors, not formal ones, which motivate change:

it is the sociolinguistic history of the speakers, and not the structure of their language, that is the primary determinant of the linguistic outcome of language contact. Purely linguistic considerations are relevant but strictly secondary overall. (1988: 35)

They go on to point out that the explanatory value of contact has been too frequently dismissed from explanations for linguistic innovation:

If a reasonable external explanation for a change is available, it must not be rejected merely because similar changes have occurred under different antecedent conditions. (1988: 59)

Perhaps most controversial of all is their claim that anything can be borrowed, given sufficient social motivation:

As far as the strictly linguistic possibilities go, any linguistic feature can be transferred from any language to any other language. (1988: 14)

This last tenet is supported with abundant and convincing evidence, such as the enormous influx of Turkish elements into Asia Minor Greek—the introduction of vowel harmony, the borrowing of morphemes of all categories, the

reorganization of syntactic patterns—and the remarkable contact which occurred in Mednyj Aleut, where inflectional patterns have replaced agglutinative ones, under the influence of Russian (Thomason and Kaufman 1988: 215–222; 233–238). They differentiate two types of contact, and demonstrate that these two scenarios have different effects (cf. Table 3, 1988: 50):⁷

- Contact with language maintenance ('borrowing'): speakers incorporate external features into their language; the process may last for long periods of time. For example, phonemic aspirated stops were introduced into some literary Dravidian dialects on the pattern of Sanskrit, as were relative clauses (1988: 37–38; 41; Chapter 4)
- Contact with language shift ('substratum interference'): speakers adopt a new language, but acquire it imperfectly as a group. The shift may occur even within one generation. For example, the introduction of retroflexion in the Indo-Aryan varieties of India may, along with an array of other features, point to the shift of a number of Dravidian speakers to Indo-Aryan, especially since few Dravidian lexical items were transferred (1988: 38–41; 141–142; see also especially Emeneau 1980)

In both scenarios, the outcome may be a simplification of the grammar, but it can also result in more complexity. In the case of interference through borrowing, e.g., Kormakiti Arabic speakers on Cyprus maintain Greek inflectional patterns for the many Greek lexical borrowings (1988: 105–106); in the case of interference through shift, Ethiopic Semitic developed a negative perfect formation with both a prefix and suffix, based upon Cushitic (1988: 51; 132).

Essential to their characterization of language maintenance is the establishment of a five-point scale of contact intensity, from casual contact, entailing lexical borrowing alone (Category 1) to profound structural influence, including radical changes to the typological structure or morphosyntactic order of constituents (Category 5). Their examples range from the nativization of Arabic words in the Urdu of uneducated Muslims, illustrating Category 1, to the adoption of cases and agglutinative case markings in the Iranian language Ossetic from the Caucasian languages, pertaining to Category 4. Category 5 is reserved for truly extensive influence, such as that found in Asia Minor Greek in contact with Turkish, mentioned above (1988: 93–94; 215–222), or European Romani in contact with an array of European languages (Matras 2003).

What emerges from their research is a comprehensive view of the sociolinguistic pressures which are responsible for change in contact situations; their work demonstrates why language contact can no longer be relegated to the realm of the nonessential in historical linguistics.

2. Areal Linguistics

Trubetzkoy (1928) coined the term '*Sprachbund*'⁸ to refer to languages which had developed similar features through shared development, not through genetic inheritance. Emeneau's (1956) fairly equivalent term 'linguistic area' is well defined by Sherzer (1973: 760) as

an area in which *several* linguistic traits are shared by languages of the area and furthermore, there is evidence (linguistic and non-linguistic) that contact between speakers of the languages contributed to the spread and/or retention of these traits and thereby to a certain degree of linguistic uniformity within the area. (emphasis his)

Areal linguistics increased in prominence in the 1990s, especially as a result of the EUROTyp Project (Typology of Languages in Europe Project). In this broad collaborative effort, scholars explored the extent to which Europe could be considered a linguistic area.⁹ Heine and Kuteva (2006) provide a comprehensive summary of scholarship on this topic, as well as a thorough analysis of a number of features claimed to pertain to the European linguistic area, among them, articles, possessive perfects and relative pronouns based on interrogative pronouns. Besides the famous Balkan *Sprachbund*, scholars have also presented evidence for the 'Charlemagne *Sprachbund*' (van der Auwera 1998b: 823–825), comprising French, German and Dutch, with Italian and Polish being closely connected; the Circum-Baltic linguistic area (Dahl and Koptjevskaya-Tamm 2001a,b), consisting of Lithuanian, Swedish, Estonian and Finnish, among other languages; and the Circum-Mediterranean linguistic area (Ramat and Stolz 2002), including Italian, Greek, Turkish, Arabic, Hebrew, etc.

In recent years, researchers have increasingly focused upon the areal distribution of the languages of the world: Masica (1976) and Campbell, Kaufman, and Smith-Stark (1986) demonstrate the essential role of areal influence in South Asia and Meso-America, respectively; Nichols (1992) examines a variety of explanations for linguistic innovation, and finds areal factors to be most influential. Boretzky et al. (eds) (1996), Aikhenvald and Dixon (eds.) (2001), Matras et al. (eds.) (2006), and Muysken (ed.) (2008) all provide extensive evidence demonstrating the crucial role played by areal factors. Recently, the World Atlas of Language Structures (WALS) has added a new dimension to the empirical analysis of geographical data, plotting the distribution of grammatical features on a world map, and providing remarkably clear evidence of areal diffusion for a number of features (Haspelmath et al. 2005). For example, the heavy concentration of languages across Central Africa and Southeast Asia which use a complex tone system points to areal diffusion (Maddieson 2005: 58–61).

3. Pidgins and Creoles

The study of pidgins and creoles has played a crucial role in the development of modern contact linguistics as a discipline, and deserves more attention than can be given in this brief survey. In his influential volume, 'Pidginization and creolization of languages,' Dell Hymes defines pidginization and creolization as complex processes of sociolinguistic change, both involving convergence, the former entailing reduction in inner form with restriction of use, the latter involving expansion in form, with extension of use (Hymes 1971: 84). In his introductory passages (1971: 65–90), he goes on to pose provocative questions about these contact varieties and to draw conclusions which would become focal points of inquiry for decades to come: he notes, e.g., that Haitian Creole, even while existing in the ambience of French, is regarded as a separate language, while Jamaican Creole, likewise existing in the context of English, is not, and concludes that it is not the mere relatedness of a dominant language which governs its influence upon a creole, but, rather, it is its social connection, along with timing, which is paramount (Hymes 1971: 67). He points out that the prejudice towards genetic classification has led some to adopt a 'dogma of continuity,' insisting on 'normal genetic transmission' for these contact varieties (1971: 80–81)—a view prefiguring both Thomason and Kaufman's claim (1988) that pidgins and creoles have undergone a break in genetic transmission¹⁰ and Mufwene's stance (2001) that scholarly treatment has been affected by a prejudicial view of these varieties. Hymes focuses upon the role of 'socio-historical factors' as motivators of change, whether with regard to pidgins and creoles or to languages in general, and sees the study of these contact languages as instrumental in explicating processes of change, since 'pidgins and creoles show the study of linguistic change without reference to its social context to be untenable' (1971: 200).

Thomason and Kaufman (1988: 174) regard both pidginization and creolization as motivated by 'mutual linguistic accommodation':

members of the new contact community make guesses about what their interlocutors will understand, and "right" guesses are incorporated into the grammar of the developing contact language.

However, creoles appear to 'crystallize' more quickly than pidgins, and, while pidgins tend to appear in more socially egalitarian situations, such as among coworkers, creoles almost always develop 'under circumstances of extreme social asymmetry.'

Researchers vary widely in accounting for the development of contact varieties,¹¹ from those who see creoles invariably undergoing extreme reduction due to contact (e.g., Mühlhäusler 1981; McWhorter 1998, 2006), to those

who find complexity retained in pidgins from typologically similar sources (Thomason and Kaufman 1988: 183). The latter present extensive evidence from non-European-based pidgins which do not follow patterns of complete simplification or so-called universal structural tendencies. For example, Chinook Jargon, a pidgin of the Pacific Northwest, retains complex consonant clusters, running counter to Bickerton's claim (1981) that universal tendencies always apply (Thomason and Kaufman 1988: 157, 263; section 9.7); Kituba, a pidgin based lexically on the Bantu language KiKongo, is more complex morphosyntactically than pidgins with less typologically similar sources such as Fanagalo (1988: 183);¹² likewise, some dialects of Chinese Pidgin Russian use prepositions as well as postpositions, SOV and V NEG word order, and several inflectional and derivational endings—all based upon features in the various source languages, such as Russian, Chinese and Tungusic. With regard to the last-mentioned outcome, Thomason and Kaufman point out the following:

None of these features could be predicted as the result of the operation of universal structural tendencies alone, because the suffixes represent marked constructions, and the word order features are different from the ones found in other contact languages. (Thomason and Kaufman 1988: 191)

Most specialists account for creole genesis somewhere along a continuum which stretches from spontaneous emergence of innate structural patterns on one end (e.g., Bickerton's bioprogram 1981) through the gradual development of creoles (e.g., Arends 1993, Arends and Bruyn 1995) to the view that the formation of creoles is indistinguishable from other processes of linguistic innovation on the other (e.g., Mufwene 2001).¹³ Mufwene, as a strong proponent of the latter view, argues convincingly that processes of intense contact should not be separated from other historical processes.

The role of the lexicon is viewed as paramount in creole formation by some scholars, especially through 'relexification' (Lefebvre and Lumsden 1989), i.e., the replacement of lexical items in a pidgin by equivalent forms in another language, such as the replacement of Portuguese-pidgin-based forms with Spanish forms in Papiamentu. This explanation is rejected by some, however, as being too extreme (McWhorter 2008). Winford (2009) accounts for creole formation by means of 'imposition' (Van Coetsem 1988), referring to situations where the speaker of a source language is the agent of change, ending up with a result not unlike Thomason and Kaufman's 'interference via shift,' but without speakers necessarily undergoing language shift. Myers-Scotton (2002), similarly, presents a more abstract explanation for convergence which relies upon lexical-conceptual and predicate-argument structure, as well as morphological realization patterns:

As a mechanism convergence is the process that promotes a splitting of abstract lexical structure in one variety, and its combining with such abstract lexical structure from another variety, often resulting in a restructuring of grammatical relations and even surface-level grammatical morphemes from the stronger group in the equation. (Myers-Scotton 2002: 164)

It is convergence which is responsible, according to Myers-Scotton, for creole formation.

Several of the key concepts in pidgin and creole scholarship have undergone an evolution and a refocusing in recent years. For example, early views (e.g., DeCamp 1971, Bickerton 1975) on the pervasiveness of a creole continuum, i.e., the 'spectrum of variation linking the more standard end of the range (the acrolect) with the conservative creole extreme (the basilect)' (Winford 1993: 7), have been refined as more data has been collected and analyzed (cf. Rickford 1987). For example, as Winford notes (1993: 11–13), the 'softness' of boundaries between standard and creole is more frequently found in urban settings than in rural ones, where the basilect may persist largely uninfluenced by the acrolect or mesolect, depending on the social structure of the community. Likewise, the concept of decreolization, i.e., the structural convergence of a creole variety towards a standard language or other prestige variety¹⁴ was once regarded as central in accounting for an expected trajectory of development of contact varieties from basilect towards acrolect. Rickford (1983), e.g., claimed that mesolects gradually diffused across the community, replacing basilects, a position contested by Mufwene (1991). Winford (1993: 379–380) goes on to demonstrate that, while some divergences to be found in the temporal-aspectual systems of Jamaican Creole (JC) and Guyanese Creole (GC) can be accounted for as due to decreolization, others clearly cannot. For example, the aspectual marker *don* is restricted to activity verbs in JC and retains a strong terminative meaning there, while it has grammaticalized into a completive in GC and can be used with any verb, including statives and nominal predicates. These changes do not represent movement toward Standard English.¹⁵ Singler (1990: 213) likewise notes that while some parts of the temporal-aspectual system of Kru Pidgin English (KPE) have undergone decreolization towards English, the tense system itself has not: KPE remains tense-free.

Recent attempts to identify substratal influence in creole languages have yielded noteworthy results. Winford and Migge (2007), e.g., have traced a number of features in the Sranan temporal-aspectual system to patterns in Gbe: they found the Gbe categories of Perfective, Completive, Progressive / Imperfective and Potential Future all reflected in Sranan. The match is not perfect, however: Gbe varieties have Habitual and Prospective categories which are not represented in the creoles,¹⁶ and the creole varieties have Predictive Future and Relative Past tenses which do not appear in the substrates. Nevertheless, the

correspondence is striking, and demonstrates the value of minute empirical analysis.

While many other works on pidgins and creoles could be mentioned, one collaborative effort, similar to that which produced WALS, merits special attention: the 'Atlas of Pidgin and Creole Language Structures (APiCS)' (Michaelis et al. forthcoming), currently under development, analyzes 60 pidgin and creole languages for 120 grammatical and phonological features. The mapping of these features makes otherwise unnoticed generalizations apparent. For example, tone (Feature 120) has a different distribution in pidgins and creoles than that noted above for other varieties: while tone distinctions are well represented in Central African pidgins and creoles, and are found in a few varieties in the New World, they are, remarkably, not in evidence in the pidgins and creoles of Asia.¹⁷

4. The Effects of Contact

When speakers adopt features from other varieties, they tend not to copy actual forms, but rather expand upon categories which already exist in their language. Exceptions do exist. For example, speakers of the Frasherote (Fărșălot) dialect of the village of Gorna Belica (Beala di suprâ) in southwestern Macedonia have copied the Albanian admirative suffix *-ka* directly (Friedman 2000: 348–349); likewise, speakers of the Sliven dialect of Romani in eastern Bulgaria have adopted the participle ending *-li* directly from Bulgarian for use as a reportative marker (Friedman 2000: 353). Generally, however, speakers engage in less direct processes of copying, such as calquing (polysemy copying), metatypy or grammatical replication. Each of these types of copying are explored below.

4.1 The Role of Calquing (Polysemy Copying)

When speakers reshape forms already in existence in their own language, refashioning them in imitation of desirable patterns in another language, the process is known as calquing, or polysemy copying. In calquing, speakers reanalyze the semantic values or morphosyntactic patterns of their own replica language according to the patterns of the model language.

Basque provides a clear example of the operation of calquing in the development of its resultatives, based on the model of Spanish and Gascon (Haase 1992: 443):

(1) Northern dialect (influenced by French):

Etxe	a-	sal	-	du	-	a	d	-	a
house	IND	sell	PCP	IND		ABS	(3PS)	.ITR	PRS ¹⁸
'The house is sold.'									

Spanish *Se llama la Sra. X, pero a nadie le gusta—ella*
 ‘Her name is Mrs. X, but no one likes her’

Generation 3: *Yo gusto eso*
 ‘I like that’ (Silva-Corvalán 1995: 262–263)

In Generation 2, the speaker no longer recognizes *ella* as the subject, as witnessed by its use with the preposition *a* ‘to.’ In Generation 3, grammatical functions have been completely realigned to match the pattern of English. In interviews conducted by Silva-Corvalán, speakers of Generation 2 produced such lexico-syntactic calques 0.9 times per ten-minute segment; speakers of Generation 3 did so at a rate of 1.3 in this interval (1995: 267).

Pidgins and creoles, too, take part in calquing. Keesing (1988: 2) notes that Solomon Pidgin has calqued Kwaio semantic values onto English-based lexica: Pidgin *dae* has acquired the same semantic range as Kwaio *mae* ‘be dead, die, be comatose, be extinguished,’ as opposed to the more specific English ‘die.’ Likewise, Pidgin *baebae* copies the semantic value of the Kwaio marker of future/non-accomplished mode, *ta-*, not its lexical source, English *by and by*.

4.2 The Role of Metatypy

A more extreme form of linguistic copying, metatypy, refers to the syntactic and semantic reordering of a replica language, morph-by-morph, based upon the patterns of the model language, with a concomitant typological realignment in the replica language (Ross 1996). Gumperz and Wilson’s 1971 study of syntactic convergence in the village of Kupwar, India, provides the classic example of metatypy, illustrating how speakers from different languages and even different language families have accommodated to each other’s syntactic and semantic patterns by assuming shared morphosyntactic orderings:²⁰

(5) Metatypy in the varieties of Kupwar

Standard Hindi-Urdu	pala jəra	kaʃ-kər	le	a-ya
Kupwar Urdu	pala jəra	kaʃ ke	le-ke	a-ya
Kupwar Marathi	pala jəra	kap un	ghe-un	al-o
Kupwar Kannada	təpla jəra	khod i	təgond-i	bə-yn
	leaves a few	having cut	taking (I) came	
	‘I cut some greens and brought them’			

(Gumperz and Wilson 1971: 159)

Here, Kupwar Urdu diverges from Standard Urdu and adopts a ‘past non-finite compound,’ in exact imitation of Dravidian Kannada.

Ross (2001: 142–143) demonstrates how calquing can interact with metatypy: when Takia, a Western Oceanic language, imitated the syntactic patterns of Waskia, a Papuan language, it tended to use its own elements, sometimes simply reordering them, but more often redefining the function of an element when needed, to make it agree with the function of the corresponding Waskia element. For example, Western Oceanic languages usually use prepositions, but Takia developed postpositions like Waskia, using, at least to some extent, its own relational nouns. To express location, Proto-Western Oceanic used possessive structures like the following:

- (6) *i lalo-ña a Rumaq
 PREP inside-its ART house
 lit. 'in (the) inside of the house'
 'inside the house'

Ross proposes that, under the continuing influence of Waskia, early Takia underwent the following stages of development:

- (a) the loss of the article and the preposing of the possessor:

- (7) *Rumaq i lalo-ña
 house PREP inside-its

- (b) the loss of the preposition and the grammaticalization of the relational noun as a postposition:

- (8) ab lo
 house in
 'in the house'

Thus, the preexisting structures of Takia were gradually reshaped to match those of Waskia. This subtle utilization of native patterns to approximate a model is reminiscent of the discovery made by Scollon and Scollon (1979: 125–126; 174) that speakers of Chipewyan were frequently choosing a previously less-used past tense suffix *-ni* in place of perfective markers $\theta\epsilon$ or $\gamma\epsilon$ because it more closely matched the English past tense structure.

Typological changes can also affect prosody and tonal structure: Matisoff (2001: 303) describes as metatypy the massive changes in tone which several languages in Southeast Asia have undergone. Vietnamese, Tai and Hmong-Mien all experienced phonotactic and prosodic influence from Chinese. The Chamic branch of Austronesian was originally polysyllabic and nontonal, but changed to monosyllabic and highly tonal in contact with monosyllabic languages on the

of futures in Romani. Heine and Kuteva go on to claim that both universal pressures and contact 'can be expected to be potentially present in some way in virtually every given case of language change' (Heine and Kuteva 2005: 122; cf. also 2003: 562).

Considerable evidence has been gathered which indicates that replicating languages almost never show the same degree of grammaticalization as their model languages (Aikhenvald 2002). For example, Bulgarian HAVE-perfects are less grammaticalized than those of Macedonian, Romanian or Greek: Bulgarian possessive perfects tend not to occur with intransitive forms, while the other three all do appear with intransitives without restriction, alongside transitives. According to Heine and Kuteva (2005: 226–227), we can judge from this fact that the Bulgarian HAVE-perfect has been replicated on the better-established perfect of one of these languages. Likewise, Czech has developed a less grammaticalized HAVE-perfect than its probable model, German (Breu 1994: 55, 1996: 31; Heine and Kuteva 2005: 101). A further implication which arises from all of this evidence is that replicating languages acquire features of the model language at differing rates, depending on the level of contact: the more intensive the contact, the more complete the replication. Bulgarian, for example, experienced extensive contact with Turkish, and, as a result, fully adopted the Turkic category of indirectivity in its perfects; Romanian, with less intense contact, incorporated fewer features of the category, while Greek did not adopt the category in any way.

Replication, then, turns out to be a more abstract form of contact-induced change than calquing or metatypy, in that it comprises not the straightforward borrowing of forms, the wholesale adoption of categories or the rearrangement of syntactic and semantic components, but rather an understanding and imitation on the part of bilingual or bidialectal replicators of a dynamic movement towards more grammaticalized forms in the model language. What Heine and Kuteva are proposing is not simply that principles of grammaticalization apply to forms as they become established in a language, but, beyond that, that replicators are capable of detecting and adopting trends as these speakers incorporate innovations into the replicating variety. While it may seem that the authors bestow too much grammatical and historical expertise on bilingual replicators, the model is appealing in its insistence that it is a grammatical process that is being copied, that indeed 'it is the overall conceptual schema that appears to have been replicated' (Heine and Kuteva 2005: 231).

This interface of contact and grammaticalization can perhaps best be characterized as existing on a continuum, as suggested by Friedman 2003: 110–111, with regard to the Balkan languages:

The place of any given Balkanism in the system of the various languages can be described in terms of a continuum from pragmatically conditioned variation to grammaticalization [. . .] A synchronic continuum from

discourse-based variation through grammaticalization can be interpreted as reflecting the diachronic development of grammatical competition through language contact.

An illustration of the highly grammaticalized end of the continuum is provided by Soper (1987), who demonstrates that the idiosyncratic adoption of grammatical features (such as the intentional moods) signifies close contact between languages. When replicating languages even adopt the exceptions from their models, we can assume that there is intimate contact between them. As another example, we can note that, not only does Bulgarian follow the Turkic pattern in using an aorist form for witnessed events vs. a perfect for non-witnessed events, but it also follows Turkic patterns for exceptions to this rule, using aorists for expressing matters of faith or to add vivacity to a narrative, as if the events had been witnessed (Bazin and Feuillet 1980: 14).

Contact may also cause languages to *retain* features. For example, the retention of the imperfect and the aorist in Bulgarian and Macedonian is clearly linked to Greek influence (Breu 1994: 58): Bulgarian-speaking communities in the Banat region, separated from Bulgaria proper and removed from the influence of Greek, proceeded to follow patterns found in many other Slavic languages in losing their imperfects completely, in retaining aorists only as relics, and in reanalyzing the *l*-perfects as the sole preterite (Breu 2005: 41).

Contact, then, can interact with grammaticalization not only in introducing new forms but also in helping stabilize existing ones through parallel forms in other languages. Conversely, when the model language does not have an equivalent structure, loss may occur (Soper 1987, Aikhenvald 2003: 18).²¹

5. Theoretical Issues: Contact and the Nature of Linguistic Change

Stolz (1989–1990: 343), in seeking to set up some of the parameters of language contact, states that

Sprachkontakt mit seinen strukturellen Folgen nicht nur ein ganz gewöhnliches Phänomen der sprachlichen Realität, sondern sogar einen sprachgeschichtlichen *Normalfall* darstellt. (emphasis his)²²

To what extent can contact truly be viewed as the ‘Normalfall,’ as ‘potentially present in some way in virtually every given case of language change’ (Heine and Kuteva 2003: 562, 2005: 122)? In what follows, we will take up the issue of the normalcy and pervasiveness of contact, and will do so from several perspectives, by attempting to answer, to the extent possible, the following questions: How does contact interact with the forces of innovation and diffusion?

What role does the individual speaker play in contact situations, and how do sociolinguistic factors shape the direction of change? While all of these questions cannot be answered in this chapter, several will be addressed in the following sections. (See Drinka forthcoming for a fuller analysis of these and other issues.)

5.1 Sociolinguistic Models: Contact at the micro- and macrolevel

As mentioned above, Weinreich insisted that contact existed within the minds of bilingual speakers (1953: 1). J. Milroy (1997) expands upon this 'speaker-based' view of linguistic contact and change:

Linguistic changes, whether their origins are internal to a variety or not, are passed from speaker to speaker in social interaction. As for *language contact*, it is not actually languages that are in contact, but the speakers of the languages. (Emphasis his). (Milroy 1997: 311)

Like Milroy, Mufwene (2001: 14–15; 150–151) regards individual language users as agents of change, characterizing the interface of these speakers and their communities as 'idiolect contact.' He erases the lines which have traditionally been drawn between internally- and externally motivated change by demonstrating that causation for so-called 'normal' internally motivated change arises from its ecological context:

The causation actually lies in the competition and selection that arise from the communicative system(s) available to speakers, and in both the accommodations they make to each other and the adjustments that they make to new communicative needs in their speech acts. (Mufwene 2001: 15)

Through such accommodations and adjustments, speakers "focus" their choice of features (Le Page and Tabouret-Keller 1985), shaping their language to be ever more similar to that of other members of their social network. As Mufwene points out, the essential explanatory mechanism of change thus lies in this interplay of individual choice with ecological, external pressures:

Nothing by way of focusing or change would take place without individuals interacting with one another, setting their respective features in competition and having to accommodate one another by dropping some features, or accepting some new ones, or even by modifying their respective individual systems. (Mufwene 2001: 151)

This view of the essential nature of the 'contact of idiolects' thus adds a stronger social component to Keller's 'invisible hand' model²³ (1994), but follows the same principle: self-interested individuals incorporate new features into their repertoire in order to align themselves with other individuals and groups, with the unforeseen result that the innovation moves across the population, speaker by speaker. J. Milroy (2006) succinctly summarizes this view as follows:

Although speakers do not voluntarily engineer changes, it must be speakers who implement them in interaction and who finally determine, through frequency of use, which changes, out of the very large array of possible changes, are accepted into the system. (J. Milroy 2006: 150–151)

Depending on their competence in both varieties, these speakers will be variably cognizant not only of the formal characteristics and the equivalence value of these structures in the two varieties, but also of the sociolinguistic value that these formal elements possess in both varieties.²⁴ Skilled bilinguals know which trends in the model language convey social value of all sorts—overt prestige connected with education and standard usage, covert prestige signaling membership in a local speech community, and a variety of other connotations. Like the 'weak ties' speakers (Milroy and Milroy 1985, J. Milroy 1992) who provide connections to external sources in dialectal borrowing, bilingual speakers turn out to be agents of innovation, refashioning elements of the replica language according to patterns that they find desirable in the model language. Crucially, as mentioned above, these innovations do not usually occur through the outright copying of forms, but rather through an increase in frequency of an already existing category in the replica language. It is the recognition of equivalence of categories in the two varieties which allows bilingual and bidialectal speakers to endow sociolinguistic value upon the replicated form.²⁵

The essential role of contact among bilingual speakers as an impetus for change is well illustrated in the innovations found in several Serbian communities which migrated into territories north of the Danube in the wake of Turkish invasions. Those communities which remained isolated (such as Catholic Karaševo) kept a remnant of their aorists, but those who mixed with the local Daco-Romanian populations (such as the residents of Catholic Rekaš and neighboring Orthodox Crna Gora) lost both their aorists and their imperfects, just as local Daco-Romanian speakers had. Other Serbian groups moved southward, into Macedonia, (e.g. to Orthodox Gallipoli). These speakers tended to keep their ancient imperfects and aorists, just as local Macedonian speakers had (Ivić 1958: 269, 278). While we cannot know which precise choices bilingual speakers were making on an individual level, we can still see in these small migrant

communities that access to and identification with the external source played a crucial role in determining the linguistic outcome.²⁶

5.2 Contact and Typological Trends

Breu (1994: 58; 2005: 41–43) provides evidence that, while typological factors are important in change, languages can be reoriented and redirected from a particular typological path through contact. Molise Croatian, for example, though it derived from a conservative dialect of Balkan Croatian which retained its synthetic preterite, has lost this form in favor of the periphrastic perfect through contact with Italian; likewise, while its foundational dialect has lost the imperfect, Molise Croatian has retained this category, again through Italian influence. The trend in Slavic, historically, was that the loss of the imperfect preceded the loss of the aorist, but Molise Croatian has diverged from this tendency and has adopted the Romance typological pattern, instead, by losing its preterite and retaining its imperfect. What such evidence suggests is that the force of contact can divert or derail typological tendencies, and is, in the last analysis, more responsible for the direction a particular change will take than typological considerations. This conclusion is altogether congruent with the observations of Thomason and Kaufman (1988), mentioned above.

Soper (1987), likewise, convincingly demonstrates that it is not the formal characteristics themselves which determine assimilability of innovation, but rather the strength of the contact between the varieties, for while the Iranian language Tajik copied the simplex verb paradigm and verb serialization from the Turkic language Uzbek, the Turkic language Qashqay, conversely, copied the simplex verb paradigm of the Iranian language Persian, and ‘lost’ verb serialization.

6. Conclusion

In conclusion, contact has emerged in recent studies as a more essential element in triggering linguistic innovation than had previously been assumed. Contact provides the context for change, in making features of one variety accessible to speakers of another. Bilingual or bidialectal speakers with access to the social values of features in both systems serve as a link between the two, a conduit of innovation from one variety to another. When close cultural contact among speakers of different varieties persists over long periods, linguistic areas can result, reflecting the ebb and flow of influence of one culture upon another. When speakers of mutually unintelligible languages encounter one another in the context of social symmetry, such as for purposes of trade, contact varieties

such as pidgins may result; in contexts of social asymmetry, such as slavery, on the other hand, creoles are a more frequent result, reflecting the adjustments which are made as the contact variety becomes the native language of its users. As Mufwene points out, however, the same principles of change appear to be in operation in contact varieties as in other varieties—it is in the transmission of language and linguistic features from one individual to another, through the impetus of sociolinguistic pressure, where change occurs, and these principles will operate whether the transmission is occurring within or across the boundaries of a variety, as long as sufficient social motivation exists.

Notes

1. 'Mit mehr Recht als Max Müller gesagt hat: "es gibt keine Mischsprache", werden wir sagen können: "es gibt keine völlig ungemischte Sprache"' (Schuchardt 1884: 5) ('More correctly than Max Müller's statement "there are no mixed languages" can we state "there are no fully unmixed languages."')
2. According to Sandfeld (1930: 4, 17), the unity to be recognized among the Balkan languages owes its existence to the domination of Byzantium and to the efforts of the Greek Orthodox Church to unite the Christian peoples of the peninsula in the face of Turkish invasion.
3. While some of Bartoli's conclusions should be regarded with skepticism, the negative reaction of scholars like Hall (1946) to the contribution of the "geographic method" was overly dismissive.
4. Thomason and Kaufman (1988: 66) refine this observation by noting that bilingualism is not a strict prerequisite for slight structural borrowing or even heavy lexical borrowing, especially when languages borrow from prestigious literary varieties, like Persian from Arabic, Japanese from Chinese, or English from Latin.
5. For an analysis of this and other claims made by Weinreich, see Matthews (2006).
6. The shift tends to occur more rapidly in urban areas, among speakers of the lowest social classes, among Catholics, among those acquiring a better education, and especially in trilingual areas, where Portuguese serves as a medium. Above all, it occurs 'where non-linguistic forms of German culture are being abandoned simultaneously.' (Weinreich 1953: 107–108)
7. They also recognize that these two processes may sometimes co-occur (Thomason and Kaufman 1988: 68–71).
8. As Chirikba notes (2008: 26), this form was itself a calque upon Trubetzkoy's earlier Russian term, *jazykovoju sojuz* 'language union' (1923).
9. Among the volumes produced in the EUROTYP series are Siewierska (ed.) (1997), van der Auwera (ed.) (1998a), Dahl (ed.) (2000) and Plank (ed.) (2003). Major works focusing on the areal features of Europe were produced alongside these: Bechert et al. (eds.) (1990), Haspelmath and König (eds.) (1995), Bernini and Ramat (eds.) 1996, Reiter (ed.) (1999), Haspelmath et al. (eds.) (2001), Dahl and Koptjevskaja-Tamm (eds.) (2001a, b), Johanson (2002), Ramat and Stolz (eds.) (2002), Kortmann (ed.) (2004) and Heine and Kuteva (2006).
10. 'We have argued that the most extreme products of linguistic interference are not genetically related to any of the languages that contributed to their lexical and structural systems, because they did not arise through a process of normal transmission' (Thomason and Kaufman 1988: 200).

11. Cf., e.g., the array of views presented in Smith and Veenstra (2001).
12. Mufwene (1990) demonstrates the complexity of the largely periphrastic temporal-aspectual system of Kituba, which, he notes, has undergone little decreolization, i.e., reverse development towards the lexifier, since Kikongo, its lexifier, is agglutinating, and is not spoken in the vicinity of Kituba.
13. In earlier works, scholars were often categorized as proponents of a universalist stance (Bickerton 1984, or, less radically, Sankoff 1979 and Mühlhäusler 1985) or a substratist perspective (Alleyne 1986); many, however, fell between the two poles, in supporting a compromise position (cf., Holm 1986, Mufwene 1986 and other articles collected in Muysken and Smith (eds.) 1986.)
14. The target language in decreolization is usually lexically related, but is not necessarily so, cf. Alleyne's view (1986) that Sranan, e.g., might be creolizing in the direction of Dutch.
15. Winford adds that other changes due to decreolization, even in apparently straightforward cases such as the replacement of *fu* with *to*, should not be viewed as simple lexical replacement, as has traditionally been done, since these entail categorical reanalysis and functional change, as well (Winford 1993: 384–385).
16. Winford and Migge (2007: 95) suggest that the Habitual and Prospective forms might be absent in the creoles because these forms were not available for 'transfer' in the superstrate. One could counter, however, that forms not originally designated as temporal-aspectual markers could have been co-opted for this purpose, if the category had been sufficiently valued (e.g., English *there > de > e*, moving from locational copula to imperfective marker). Still, as noted in section 4 below, grammatical innovation usually occurs through extension of existing categories in the replicating language, and this fact lends support to Winford and Migge's explanation.
17. Without the benefit of this survey of structural properties, McWhorter (2006: 258–259) assumes summarily and incorrectly that 'creoles make little or no use of tone [...] to encode lexical or morphosyntactic distinctions.' He accounts for the paucity of tone in creole languages as owing to the difficulty that second-language learners would have in acquiring it quickly on their own. He uses this and other evidence, such as the lack of regular marking of core grammatical relations or of grammatical gender (2006: 257; 265), to argue that creole languages are fundamentally different from 'older languages' because they have experienced thoroughgoing simplification at their formation.
18. IND = individualizer; PCP = participle; ADD = additive; ABS = absolutive; PRS = present.
19. Heine and Kuteva (2006: 183–203) devote considerable attention to similar developments of comitative and instrumental forms across the languages of Europe.
20. Hindi, Urdu and Marathi are Indo-Aryan languages; Kannada is Dravidian.
21. See also the discussion of the interface of grammaticalization and contact in Traugott (2010) in this volume.
22. 'Language contact, with its structural consequences, represents not only an entirely usual phenomenon of linguistic reality, but even a *normal case* in the history of languages.'
23. The 'Invisible Hand,' coined by Adam Smith in *The Wealth of Nations* (1776), refers to the tendency for individuals to make economic decisions for their own advantage, but with the unintended outcome of benefiting the entire community. Keller (1990/1994) applies this concept to the spread of linguistic innovation across a population, which he claims occurs without conscious action on the part of individuals.
24. The views of Croft (2000: 178), in his description of the social role of propagation, are particularly apt here: 'A speaker does not produce one linguistic variant in preference to another in an utterance because of its linguistic properties. A speaker identifies

herself with a community or a subset of a community and that causes her to produce one linguistic variant in preference to another.'

25. Heine and Kuteva (2005: 12–13) state that they wish to exclude sociolinguistic data from consideration: 'In fact, there is evidence to suggest that social variables are largely irrelevant as determinants of contact-related change—at least of the kind studied here.' I would suggest that, in so doing, they are missing a valuable opportunity to understand the role of variation in grammaticalization. It should be noted, at any rate, that they do include sociolinguistic parameters such as age, sex, and rural vs. urban location in their analysis (2005: 28).
26. Scholarly interest in the role of bilingualism in contact has been growing, cf. the analysis of Deuchar et al. (2007), demonstrating how empirical methods can be used to assess the effects of bilingualism and to project outcomes of contact.

19 Regional and Social Dialectology

J. K. Chambers

Chapter Overview

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1. Two Branches of Dialectology

Systematic study of language variation came into being in the second half of the nineteenth century partly as an antidote to claims by Neogrammarians and others that sound changes admitted no exceptions. For centuries before that, dialect differences had fascinated observant onlookers, as they do today, either as curiosities in the speech of strangers or as ‘errors’ in the speech of neighbors. The transition from casual observation to systematic data-collection disturbed some practitioners in the beginning. In 1875, the philologist Alexander Ellis complained that ‘collecting country words is looked upon as an amusement, not as laying a brick in the temple of science’ (Ellis 1875: 1087fn). By then, it was very clear to Ellis and a growing coterie of specialists that those ‘country words’ bore evidence of mergers, splits, ellipses, grammaticalizations and other changes that might otherwise be unrecoverable in the historical record. The status of dialect studies in the broadest sense has steadily increased ever since.

Dialect studies comprise two distinguishable branches generally known among linguists as dialect geography and sociolinguistics. Dialect geography is sometimes called ‘dialectology,’ but it is sensible to reserve that term for generic use, in the sense that both dialect geography and sociolinguistics are dialectologies, i.e., frameworks for studying linguistic variation.

Dialect geography is a venerable discipline, predating modern linguistics, which had its effective origins in 1916 with the publication of Ferdinand de Saussure's lectures. The beginnings of dialect geography are conventionally pegged at 1876, when Georg Wenker distributed written questionnaires to about 50,000 German schoolmasters in order to elicit regional variants (Chambers and Trudgill 1998: 15–16). Precedents exist, notably the Finnish polymath Anto Warelius (1821–1904), who in 1846, 30 years before Wenker, walked in a north-westerly line from Hamina in southeastern Finland collecting dialect variants from one village to the next over 400 km and tracking the transition between two major dialect regions (Chambers 2000: 170). The undisputed masterwork in the discipline is the 13-volume *Atlas linguistique de France*, directed by Jules Gilliéron starting in 1896 and completed in 1910. Gilliéron's atlas became the influential precedent for numerous studies both national and regional throughout the twentieth century.

Sociolinguistics has a much shorter history, with its effective beginnings in the 1960s with the dissemination of William Labov's ideas. Here too, precedents exist, most notably in the work of Louis Gauchat (1866–1942), who published in 1905 his findings on the social distribution of linguistic variants in a Swiss alpine town. Gauchat anticipated many concepts that would become integral to sociolinguistics six decades later, but in its day Gauchat's social orientation was overshadowed by Gilliéron's geographic orientation, and Gauchat's accomplishment remained isolated (Chambers 2008). Sociolinguistics, when its time came, essentially applied social-science principles to linguistic matters. The structural intricacies of language provide cogent empirical groundwork for hypothesis-formation and testing. Notwithstanding its belated start, sociolinguistics rapidly developed into a core area for language studies with international practitioners and multifaceted concerns (Chambers et al. 2002).

Although dialect geography and sociolinguistics are both dialectologies in the broad sense, they differ in fundamental ways. Dialect geography, as the name implies, primarily concerns itself with region as independent variable. Linguistic elements are elicited in a region and the variants are located spatially, traditionally laid out on maps and discussed in terms of geographical patterns. Sociolinguistics, by contrast, concerns itself with independent variables of class, age, sex and other social attributes. Region is a possible independent variable (Chambers 2000), but in practice it is usually controlled by studying social variation in a specific community. By the same token, social variables sometimes figure in dialect geography, by comparing, say, different age groups throughout the region under study (Chambers and Trudgill 1998: 167–184). Multivariate studies of this kind are relatively rare. Dialect geography traditionally controlled social factors, choosing subjects who were mainly nonmobile, older, rural males, known acronymically as NORMs (Chambers and Trudgill 1998: 29–31, a term adopted in preference to 'folk' and 'peasants' that were used in the early studies).

Prototypically, traditional dialect geography is qualitative, univariate and categorical. Sociolinguistics is quantitative, multivariate and variable. Nowadays, dialect geography increasingly imports methods and analytic techniques from the younger discipline, often distinguishing itself from the older tradition by the name 'sociolinguistic dialectology' (Chambers 1993). The convergence of goals and methods from sociolinguistics into dialect geography may ultimately lead to a situation in which most dialect geography is sociolinguistic. The essential difference between them would then be signaled by the relative importance of region as independent variable.

2. Historical Inferences from Regional Variation

Dialect geography was explicitly historical in its rationale. Primary subjects, such as the ones identified as 'Type A' in the Linguistic Atlas of the United States and Canada (LAUSC), a project launched in 1930, were characterized as 'aged, or regarded as old-fashioned.' The LAUSC director, Hans Kurath, discussing results from the first survey region, the New England states, noted that 'since most of the informants . . . are over 70 and not a few over 80, it would seem that we should be able to establish the regionalism of the pre-industrial era of New England' (1949: 27). Later projects that admitted subjects from a broader social spectrum, making them more representative in terms of sex, age and race, retained the bias for regional roots. The last completed LAUSC project, in the Gulf States, approached inclusiveness in race, sex and age but still made 'local nativity the primary criterion in the choice of all subjects' (Pederson 1986: 21).

Selecting NORMs as informants followed from the historical bias, on the assumption that the speech of the oldest, most conservative (or least worldly) people in the region would preserve archaisms and thus give dialectologists access to the oldest extant speech forms. This assumption is actually a version of what sociolinguists later elevated into one of their fundamental postulates, the 'apparent-time hypothesis.' It follows from the observation that people acquire the main features of their dialects in their formative years, between the ages of 8 and 18, and they maintain those features largely unchanged throughout the rest of their lives. Dialect geographers merely assumed it to be true, without overt discussion or evaluation. Because they were working with immobile and insular individuals, it was a reasonable assumption.

Drawing historical inferences from dialect geography surveys requires aggregating data in some way. Ironically, primary sources of data, the classic dialect atlases, generally present one token at a time, mapped to show the occurrence of variants at each elicitation site. Annotations by the atlas-makers

sometimes venture more general statements, but not necessarily and, when they do, often impressionistically.

Generalizations are usually left to secondary sources. Figure 19.1 shows George Jochowitz's aggregation of data from the *Atlas linguistique de France* (ALF) for the purpose of determining the major dialect division in the nation, the Franco-Provençal boundary (Jochowitz 1973). For six variables (listed in the lower right on the map), Jochowitz ignores most of the variants for 639 towns and villages in the atlas and shows only the sites at which the major variant in the north gives way to the major variant in the south; a line is drawn between the sites to form an isogloss, the boundary line where one variant gives

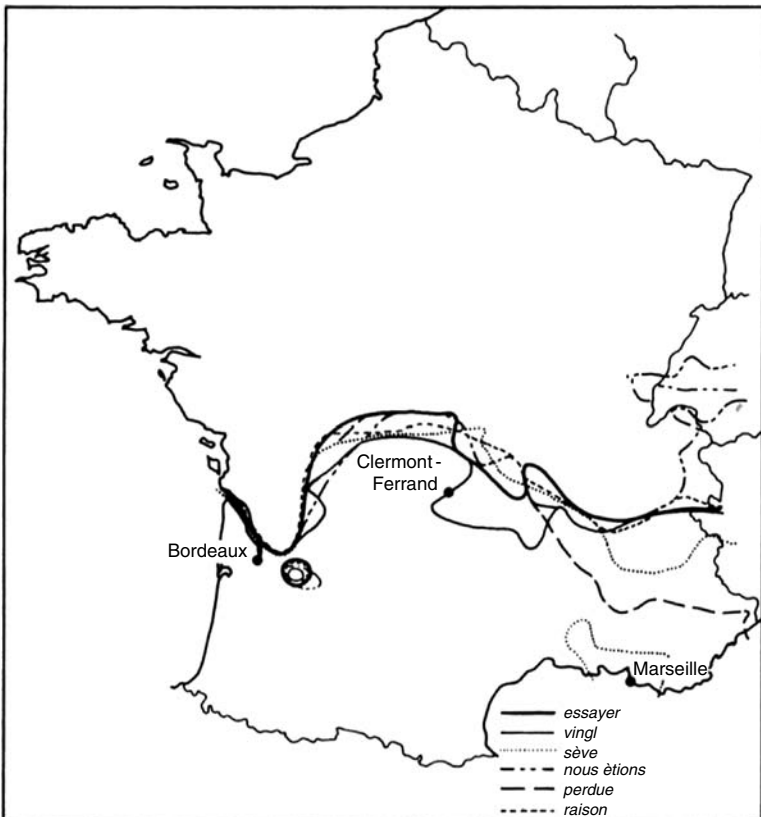


Figure 19.1 The bundle of isoglosses trace the main dialect division in France between French in the north and Provençal in the south (based on Jochowitz 1973, from Chambers and Trudgill 1998: 96 used by permission)

way to another. The six isoglosses on the map comprise a 'bundle,' several lines that trace a similar path. The paths are never identical, a situation that can be interpreted as the geolinguistic counterpart of Meillet's axiom that 'every word has its own history.' The boundary formed by the bundle of isoglosses is fuzzy, as boundaries normally are, but the regions above and below it are fairly clearly differentiated.

The geolinguistic division in Figure 19.1 has linguistic significance in demarcating the venerable *langue d'oïl* and *langue d'oc* regions as they existed among the insular, conservative speakers at the turn of the twentieth century. It also has social and cultural significance corresponding roughly to the ethnic split in settlement history that goes back to the fall of the Roman Empire, represented by complex differences in agriculture, architecture, temperament and other matters popularly associated with Gallic styles in the north and Mediterranean styles in the south. Dialect differences are probably the most abiding reflection of that ancient difference. Replications in the region of Jochowitz's isoglossic border today would undoubtedly show it has been pushed further southward as standardization spreads outward from Île de France, shrinking the cultural boundaries of old Provence and bringing with it marginalization of Provençal autonomy.

Recent developments in dialect geography exploit technological advances in our ability to aggregate greater volumes of data. They also reflect increased engagement by dialectologists with the concerns of theoretical linguistics. Historically, these trends are revolutionary. Previous generations of dialectologists often dismissed theoretical linguists because their claims were 'underspecified by data.' Tit for tat, linguists often ignored dialect geographers for being solely preoccupied by data. Rapprochement is now underway with promising results that should stimulate further integration.

Heap (2000) provides one *modus operandi*. His research attempts to locate the geolinguistic bounds of the 'null subject parameter,' a concept based on the Chomskyan parametric framework. Languages were said to be divided into those with obligatory subjects (like English and French) and those that permit null subjects (like Spanish *hablo*, Italian *parlo* '[I] speak'). Typologically, the distinction appeared to carry implications for other grammatical properties such as stylistic inversion and question formation (Rizzi 1986).

This theoretical parameter, Heap suggests, should have geolinguistic consequences by carving an abrupt isogloss in the West Romance continuum at the point where null-subject Italian varieties meet non-null French varieties. Standard Italian and standard French are polar extremes, the former requiring overt subjects and the latter permitting null subjects. Viewed in isolation, as if no dialectal variations existed, the parameter is (as Heap puts it) 'just about true.' What do we find if we look at dialects spoken in the countryside between the two standard varieties? Heap amasses data for these in-between dialects

from two classic atlases, Gilliéron's ALF (1902–10) and Jaberg and Jud's Italian atlas (1928–40), which provide abundant data on grammatical constructions for all subject pronouns. He aggregates data for 438 contiguous sites in France, Italy and Switzerland, citing more than 220 grammatical constructions (110 maps from each atlas). Instead of an isogloss, i.e., an abrupt boundary where null-subject dialects (like standard Italian) give way to obligatory-subject dialects (like standard French), he finds a broad transition zone from Florence to Grenoble. Within it, he identifies five major dialect gradations in terms of subject deletions (2000: 113–126). The gradations form a coherent geolinguistic continuum between standard Italian and standard French. The in-between systems are transitional both grammatically and geographically. In other words, these dialects mix the constraints on subject deletability, some permitting null subjects with third-person singular subjects but not elsewhere, and some permitting them with all third-person subjects, and so on. While the dialect variations are no less systematic than the standard varieties themselves, their existence refutes null-subject as a parameter. The grammatical reality turns out to be more disparate than the parameter predicts. Besides null-subject and required-subject varieties, there are three more varieties in which subjects can be omitted in some persons but not all. The variations that occur are orderly and systematic—and arguably all the more interesting for being attested.

Testing theoretical postulates with dialect data in this way hearkens back to the motive that purportedly gave rise to systematic dialectology in the first place. The early dialectologists purportedly pursued their investigations to test the veracity of philological generalizations. Ironically, one searches the classic literature in vain for any kind of direct confrontation between the two sides. If Wenker, Gilliéron and their followers actually challenged the Neogrammarians, they did so inferentially, not directly. In all likelihood, they were distracted by 'a superfluity of data' (as Kretschmar et al. 1989 put it), the bane of all empirical fieldwork in the days of handwritten file cards and monotype maps. Contemporary dialect geography, abetted immeasurably by technological advances and theoretical involvement, may yet fulfill the scientific mission envisioned by the founders in the nineteenth century.

3. Historical Inferences from Social Variation

Sociolinguistics adapted its methods largely from the social sciences and took its goals largely from other branches of linguistics. Neither its methods nor its goals descend directly from dialect geography. Yet it is plausible to think of sociolinguistics as a radical reformation of dialectology (in the broad sense) that was dictated by radical social changes. Urbanization eroded agricultural homesteads. The growing middle-class—embourgeoisement, in sociology jargon—led

to educational access, universal suffrage and other forms of enfranchisement, breaking down once-rigid boundaries between gentry and tenants, old and young, women and men. Universal education brought mass literacy and social mobility, reinforcing mainstream dialects and ignoring traditional ones. Social reforms such as child labor laws, compulsory education, age of consent for sex, marriage, drinking, driving, military service and other 'adult' pursuits prolonged adolescence and gave it demographic significance.

NORMs, whose speech was enshrined by dialect geographers, shrank almost out of existence. In every society the majority was the opposite of NORMs—mobile, younger, urban and female. Like other social scientists, sociolinguists sought inclusiveness, and that brought with it representative samples, data aggregated for social strata and trends apprehended as tendencies, i.e., quantitatively. Language in its social uses is heterogeneous, and sociolinguistics seeks to discover the system underlying that heterogeneity.

'Not all variability and heterogeneity in language structure involves change,' Weinreich et al. (1968: 188) said in a seminal article, 'but all change involves variability and heterogeneity.' The social attribute directly correlated with change is age. This observation may seem obvious now, given that age inextricably involves time and time is the medium for change, but it was not always obvious. Theories descended from Saussure maintained that change could only be observed by examining two or more structural states (Labov 1994: 44–45; Chambers 2002: 355–362). Apprehending change in progress was deemed impossible—indeed, 'inconceivable' (Bloomfield 1933: 347). 'Even the most accurate phonetic record at any one time could not tell us which phonemes were changing,' Bloomfield said (1933: 365), and Hockett, Hoenigswald, Hjelmslev and other structuralists concurred. Ironically, dialect geographers understood the fallacy underlying this position, though none of them ever pointed it out. They used NORMs as subjects, as we have seen, to elicit archaic dialect forms from living sources. That is a version of the apparent-time hypothesis (Labov 1994: 43–73; Chambers 2009: 198–219), which underlies the study of changes in progress.

Language change is constant, and dialect geography exploited the fact that old people tend to maintain dialect features acquired in their formative years throughout their lives. Sociolinguists extrapolated that tendency to all age groups. The apparent-time hypothesis postulates that people of different ages in the same community may differ in accent and dialect, and those differences may be caused by changes in progress. It is a hypothesis, not an axiom, and results based on it must be tested. Obviously, people do occasionally adopt changes that come into the language after their formative years. My parents, for instance, called the living room the 'front room' in their youth but changed to living room as adults. However, in other respects they stuck with the norms of

their youth. My father, for instance, pronounced words like *barrel* and (wheel) *barrow* with a back unround vowel, so the stressed syllable sounded like *bar*, and he never changed although people younger than him all have mid front / ϵ / in those words. So for 'front room,' the apparent-time hypothesis fails (but only for my parents; in the whole community, of course, not everyone in my parents' generation replaced *front room* with *living room*); in the second instance it holds.

One situation in which the apparent-time hypothesis is always wrong involves age-graded changes. Some linguistic changes repeat themselves in successive generations. An obvious and trivial example is the replacement of nursery words such as *momma*, *dada*, *ta-ta*, *pee-pee*, *poopie* and the like. Children replace these words with more grown-up words in early childhood and the lexical shift marks a developmental stage from infancy to childhood. The shift recurs in every generation. A naïve linguist, discovering that the word *urine* is used by older people and *pee-pee* is used by younger people might be led to conclude that it was being replaced by *pee-pee*, but that would obviously be mistaken. Rather than a change in progress, the nursery words are recurring linguistic markers of infancy that get eliminated as the infant grows older.

Testing the apparent-time hypothesis is infallibly accomplished only by bringing real-time evidence to bear, i.e., by replicating the study after a time interval. More immediate methods of testing it are also possible. Obviously, lexical replacements like *front room*/*living room* are most vulnerable to retroactive change because the lexicon is closer to consciousness than other parts of the language faculty. Phonology, as in the vowel of *barrel* and *barrow*, is more deeply embedded, and more likely to remain fixed for life. If a change is taking place in a community, whether lexical, phonological or grammatical, surveying a representative subject sample will normally reveal a statistical consensus regardless of retroactive changes by some subjects. Real-time tests have occasionally revealed contingencies, hardly unexpected in complex societies and always revealing in their own right. The apparent-time hypothesis must be used with caution, but its validity is established beyond a doubt.

The study of changes in progress yields a dynamic view of language in its social context. Linguistic variants in the speech of the sample survey population are coded for linguistic conditioning factors and for social attributes of the speakers. Typically, the linguistic difference between people in different age groups will be probabilistic, marked by different frequencies in the use of certain variants, with the younger subjects accelerating the use of the innovative or incoming variant.

Occasionally, the linguistic difference between age groups might be categorical, with the innovative variant completely absent in the speech of older people. This pattern is most common with grammatical variables. It occurred, for

instance, in the rise of the quotative marker *be like* in the 1990s, which came into vernacular use like the following narrative by a high-school student (with *be like* quotatives in italics):

I was hanging around in the hall, and Mr. Brown came out of his classroom, and he's *like*, 'What are you doing out here?' And I'm *like*, 'I'm going to the washroom, okay?' And he's *like*, 'Well, get a move on then.'

First studies showed *be like* completely absent in the speech of people over 30, and subsequent studies pushed the oldest users into the 40-year-olds. One possibility is that *be like* may be an age-graded change, a marker of adolescence that will disappear with maturity, but more likely it is an innovation that originated with adolescents and is being carried by them as they grow older. For our purposes, it stands as an example of a categorical change, completely absent in subjects over a certain age.

Phonological changes are almost always graded through the community. Adolescents are typically the agents of change in the first stages. The variant they accelerate normally has minority status in the speech of older people, but once it attains majority status for younger people, other variants are stigmatized as old-fashioned or unfashionable and they recede before it.

Many aspects of changes in progress can be illustrated in the phonological change shown in Figure 19.2. The variable is called (aw)-Fronting, and it involves change in the diphthong /aw/ in Canadian English, the nucleus of words like *how*, *howl* and *hound*. For older Canadians, the onset is normally back [au] but for younger ones it is often fronted, either central [au] or front [æu]. The change was first studied in 1979, when it was relatively recent, with three age groups, 12-year-olds, 22-year-olds and over-45, equally represented by females and males. The main results can be seen in the dark bars in Figure 19.2, where the age groups are identified by birth-year (12-year-olds in 1979 were born in 1967, 22-year-olds in 1957, and 46+ before 1934). The scale on the ordinate represents the Fronting Index (FI), a weighted index score calibrated so that speakers with the back onset exclusively would score 0 (zero) and those with the front onset would score 200 (for details, see Chambers 2006 and references therein). Obviously, no group scores these extremes but all groups fall in between, i.e., all of them have some instances of the in-between vowel onset, the central one.

The age groups are clearly differentiated with respect to this variable. The height of the bar shows the amount of fronting; the higher the bar, the more fronting. The adults (pre-1934) have almost no fronting, i.e., they have mainly back onsets, representing the old standard that is being supplanted. Both the 22-year-olds (b. 1957) and the 12-year-olds (b. 1967) score considerably higher, around the mid-point of the scale. The youngest speakers outscore the others.

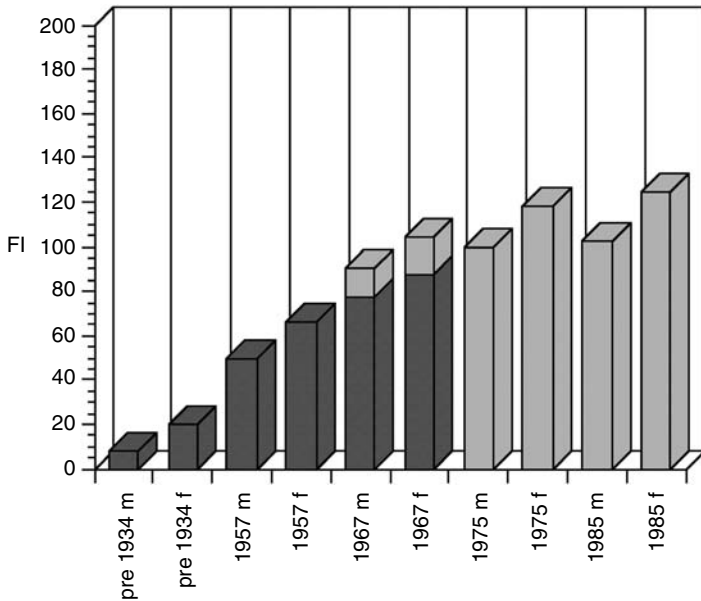


Figure 19.2 (aw)-Fronting in Toronto for males and females (m, f) five age-groups (indicated by birth-year) based on studies made in 1979 (dark bars) and 1997 (light bars) (Chambers 2006: 116)

The steady rise from oldest group to youngest is the classic pattern for a change in progress, representing as it does the steady increase in the adoption of the innovative variant.

Another consistent pattern in Figure 19.2 is that females (f) score higher than males (m) in each age group. The difference shows that females are at the forefront of the change and are to that extent leading it. Sound changes led by women are typically standardizing changes, i.e., changes that will become fixed in the standard accent. Replications of this study in other Canadian cities (Chambers 2009: 71–73) discovered that the change was progressing there with exactly the same social correlates at almost identical rates.

The Toronto study was replicated in real time 18 years later by Gordon Easson, who went into the same Toronto neighborhood and applied the same interview protocol to three age groups—30-year-olds, who had been the 12-year-olds in the first study, and new groups of 22-year-olds and 12-year-olds. Results are shown in the light bars on Figure 19.2. The new results for the overlapping age group, the subjects born in 1967, are laid on top of their scores in the original study. The slight increase is not statistically significant and so does not upset the apparent-time hypothesis, although the strictest interpretation

would lead us to expect identical scores both times. The increase may simply indicate a kind of affirmation of the newly established norm by its principal innovators.

That the central onset vowel is indeed the new standard is indicated in the real-time test by the scores for the two youngest groups (b. 1975, 1985). They are very similar to one another, and furthermore they do not show a significant rise from the scores of the subjects born in 1967. Whereas the earlier study showed a steep rise from the oldest to the youngest (indicated by the incline of the dark bars), the later study shows leveling (in the flat trajectory of the light bars). In theory, the younger groups in the real-time study might have continued along the earlier path, which would have moved the standard to the front onset. Instead the change stabilized at the central onset (a result corroborated by subsequent studies using different methods and instrumental measures).

The chronology of the change can be fixed with some precision. (*aw*)-Fronting began to take hold sometime in the 1950s. We infer that because it was barely discernible in the 1940s, the formative years of the oldest group in our study, but it had made clear headway in the 1960s, the formative years of the original 22-year-olds. In the late 1970s it stabilized and the central onset has now become established as the new standard. The change has taken place beneath consciousness, as phonological changes often do. Because it was subconscious, it did not evoke comment from teachers, parents or other arbiters. It is also not susceptible to style-shifting or any kind of adjustments when speakers are placed in more self-conscious contexts.

One explanation for the lack of conscious awareness might simply be the fairly subtle phonetic difference that is involved (though undergraduates have little difficulty hearing the difference when listening to texts spoken by people with the old and new phonetics). Another possible explanation for its imperceptibility, apparent in Figure 19.2, is that changes like this one are socially graduated, in the sense that they are actualized in steps, so that people born in 1957 sometimes use the same variant as their elders and sometimes use the variant preferred by the younger generation. The people at the extremes of the age range, the oldest men and the youngest women, sound quite different from one another in this respect, but the intermediate age groups truly are intermediaries.

This observation, needless to say, would have been impossible in theories that eschewed studying changes as they were progressing. When we look at the in-between groups, we notice what seems to be a communal rationalization for the implementation of language changes, such that individuals sound more like people they are similar to in age. People are insulated from abrupt or sudden changes because the people nearest to them socially are the most similar to them linguistically. Socially, it could hardly be otherwise. People maintain their most intimate relations with their own age cohort—they are in step, more or

less, in terms of occupational rank, fashions of all kinds and values, including, we now know, the linguistic variants they use.

4. Dynamics of Language Change

Language change viewed through dialect differences is change in motion. The motion can be ponderous or rapid. Some changes recorded in dialect geography inch their way across the landscape from one generation to the next and others leap from city to town in a single generation. Sociolinguistic changes sometimes diffuse through one social group and fail to touch others, increasing social divergence in terms of class or age, and others percolate through the entire social spectrum as communal changes. The essential dynamism of language was noticed as long ago as 20 bc when the Roman polymath Varro declared *consuetudo loquendi est in motu* (Chambers 2009: 241). Varro's maxim — 'the vernacular is always in motion' — is understood more profoundly than ever in twenty-first century social and regional dialectology.

In their seminal statement propounding variationist approaches to language, Weinreich et al. (1968: 99) declared, 'A model of language which accommodates the facts of variable usage and its social and stylistic determinants not only leads to more adequate descriptions of linguistic competence, but also naturally yields a theory of language change that bypasses the fruitless paradoxes with which historical linguistics has been struggling for half a century.' A half a century or so after they made that declaration, sociolinguistics and the revitalized dialect geography have indeed shed considerable light on the mechanisms of language change, its agents and its actuation in communities.

20 Causes of Language Change

Silvia Luraghi

Chapter Overview

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1. Introduction¹

Why do languages change? Given its crucial nature, historical linguists have been concerned with this question over the past two centuries; answers provided are sometimes quite fanciful, and discussions of the causes of language change often start with a list of imaginative theories, the most popular being breathing efforts in mountain environment as a possible cause for the first sound shift in Germanic. Even without reviewing such proposals, current theories of causation in language change are quite disparate, and, depending on the perspective from which they are seen, may also look rather unlikely. Ultimately, one's views on the causes of change are inextricably connected with one's general assumptions on language and on the real object of linguistic research.

2. Inter-Generational Transmission

Let us start with the apparently commonplace observation that languages display a wide margin of synchronic variation. As uncontroversial as this statement

may sound, it cannot help us much if we assume, following the by now almost anecdotal quote from Chomsky (1965: 3), stating that '[l]inguistic theory is concerned primarily with an ideal speaker-listener, in a completely homogeneous speech-community, who knows its language perfectly.' Since, as noted by Weinreich et al. (1968: 188), '[a]ll change necessarily involves heterogeneity and variation,' such a view of language clearly rules out any possible study of language change, simply because it leaves no possibility for change to happen.

Admittedly, since 1965 generative linguistics has tried to come to terms with the undeniable fact that languages do change, and has focused on intergenerational language transmission as the locus for change. Following this approach, language change corresponds to a different parameter setting by the new generation as a result of reanalysis. According to I. Roberts (2007: 230), the issue of causation in language change can be formulated as follows: 'if the trigger experience of one generation permits members of that generation to set parameter p_k to value v_i , why is the trigger experience produced by that generation insufficient to cause the next generation to set p_k to v_i ?.' In the same vein, Lightfoot (2003: 505) claims that '[i]f one has a theory of language and a theory of acquisition, it is quite unclear what a theory of change is supposed to be a theory of.'

The idea that the main cause of change, at least as far as so-called internal causes are concerned,² lies in imperfect language transmission from one generation to the next is not new: as shown in Weinreich et al. (1968) similar views were held by Herman Paul in the nineteenth century. Similar to modern generativists, Paul, too, indicated the competence of individual speakers as the proper object of linguistic research.

In spite of various implementations, the 'child-based theory' (cf. Croft 2000: 44) leaves some basic questions unanswered, i.e., in the first place: how do children independently come up with the same reanalysis at exactly the same time (cf. Hock 1992: 229)? and, second, why does this happen in certain precise moments, while preceding generations of children have apparently done quite well setting parameters the same way as their parents did? In other words, the second question shows that the child-based theory does not account for the fact that not only languages may change, but also that they may exhibit no changes over remarkably long periods of time.

Critics of the child-based theory have often pointed out that children do in fact make deviations and overgeneralizations in their L1 acquisition, but these are not of the type that generates language change (cf. Hock 1992: 229; Aitchison 2003: 738). Besides, recurrent deviations and overgeneralizations tend to be abandoned at a certain age, and this process repeats itself over generations. In fact, to radicalize the argument, following the child-based theory one might expect that features of baby talk to go into language change, which is patently not the case (see the discussion in Chapter 11, this volume). Moreover, proponents of the child-based theory belonging to any school of thought,

whether generativists or structuralists or neogrammarians, have never really tackled the serious problem that there is no positive evidence, in terms of real data from field research, for language change to happen between generations, as pointed out in Aitchison (2003: 739).³

3. Variation and Prestige

Starting from the 1960s, sociolinguists have shown what dialectologists had known for almost a century, i.e., that variation cannot be described by drawing precise boundaries. As dialectologists did for regional variation, sociolinguists studied variation across social strata and across registers used in various situations by members of the same community, and were able to capture change in progress by means of a number of longitudinal studies, some of which have become a classic, such as Labov's study of the vowel system at Martha's Vineyard (see Labov 1994 for a summary, and Chambers, this volume, on the relation between sociolinguistics and 'traditional' dialectology). Such studies provide evidence that language change happens among members of a speech community, rather than among children learning their L1, and show how relations among social groups favor the spread of certain innovations. It must be noted that an innovation is not in itself a change: for an individual innovation to become a change, it must be adopted by members of a community, i.e., an innovation may become a change only after its diffusion, as argued especially in Milroy and Milroy (1985) and Milroy (1992) among others. Accordingly, Milroy and Milroy (1985) distinguish between innovators and early adopters: the latter are responsible for the diffusion of an innovation, and thus for language change.

Put this way, the issue raises two further questions: first, why do innovations come about, and second, how do certain innovations spread in a speech community in such a fashion that most speakers finally adopt them. Possible answers to these questions are discussed in the following two sections.

3.1 Innovation

Asking how individual innovations come about implies asking why languages vary. This issue has been approached from an experimental perspective especially by phoneticians. According to Ohala (2003; see further Chapter 6 in this volume), phonological change is based on phonetic variation; phonetic variation, in its turn, is endemic both in production and in perception, due to such factors as the phonetic environment and the type of sounds involved. Experimental evidence matches attested changes (2003: 672–673), and phonological attested

changes appear to be drawn from a pool of synchronic variation which can be observed through laboratory techniques (Ohalo 1989). Given the extent to which individual listeners misperceive sounds, one wonders why phonological change remains quite limited: according to Ohalo, individual events of non-corrected misperception, which he calls 'mini-sound changes,' most frequently do not bring about 'maxi-changes' simply because listeners have other opportunities to correct their misperception. Thus, only under specific environmental conditions do mini-sound changes turn into real sound change.⁴

Such a view implies an unconscious and ultimately random origin of innovation as a 'change from below,' following Labov's terminology (Labov 1994). However, especially in research on grammaticalization various scholars have pointed to the possible conscious or semi-conscious role of individual speakers.⁵ Traugott (Chapter 15 in this volume) surveys various theories of the motivations for the onset of grammaticalization, and Lujan (Chapter 8 in this volume) indicates that 'semantic change may arise from a conscious use.'

Possible conscious role of individual speakers is especially clear in lexical innovation: one only has to think of scientific terminology, as well as of well-documented cases of new words created by high prestige individuals, such as writers and poets (cf. Lüdke 1986: 14). That conscious innovation can also have such a bearing on the creation of new grammatical forms or constructions is doubtful, though admittedly it may have a bearing on the diffusion of innovations. What sounds more convincing is the idea that speakers unconsciously or only semi-consciously bring about innovations while complying with the need to be successful in communication. In this vein, Traugott and König (1991) and Traugott (Chapter 15 in this volume) indicate the effects of Gricean conversational maxims (cf. Grice 1989) as the origin of changes connected with grammaticalization.

In a broader frame, and not only restricted to grammaticalization or to semantic or lexical change, Lüdke's and Keller's invisible hand theory (cf. Lüdke 1986, Keller 1994) explains language change as due to the sum of unconscious actions by speakers converging in the collective effort implied in communication, which is a goal-oriented activity. According to Keller, speakers aim to be socially successful (1994: 106). This translates into a number of maxims, including the attempt to identify or not to identify with a particular group, to attract or not to attract attention, as well as to economize energy. In Keller's words, '[w]hen we are talking, we try to kill several birds with one stone: we try to conform, attract attention, be understood, save energy' (1994: 105). Thus, being socially successful may have different meanings depending on the situation; accordingly, innovations brought about by compliance to communication maxims generate variation. Such variation may generate change when efforts to conform to the maxims create unconscious convergence. Thus, language change is brought about by human activity, albeit unintentional and aimed to different

ends. As Lüdke explains, 'there is a vast domain of human behavior constituted by constraints chosen in a more or less free fashion. These constraints are accepted . . . being strategies that guarantee success in interaction between individuals' (1986: 7). Following this approach, one can explain the origin of innovation and its effects considering the obvious fact that speakers do not consciously plan to change their languages (cf. Lass 1997), and without resorting to system-internal causes independent of speakers, as is sometimes done in structuralist frameworks (see below, section 4).

3.2 Diffusion

As remarked above, innovations do not turn into changes without diffusion. An explanation of how diffusion happens is rather complicated within the child-based theory: as noted above, it seems to imply that all children come up with the same reanalysis at the same time. Lightfoot (1999: 80) offers a more detailed scenario, assuming that adults' innovations, though not in themselves reflecting changes, are learned and reanalyzed as part of the grammar by children, who remain the agents of change. A similar theory is accepted by Andersen, who believes that adults may adopt innovations for various communicative needs, but do not change their grammar, and concludes that '[w]hereas reanalysis of the base grammar occurs in the course of a speaker's primary grammar formation, adoption is achieved through a secondary modification of the speaker's usage rules' (2003: 232).

The difference between grammar on the one hand and usage rules on the other, however, looks slippery: when longitudinal studies such as those described in Labov (1994) indicate that changes have spread in the course of time within the adult population of a speech-community, how is one proving that such changes only affect usage rules? Besides, sociolinguistic studies have discovered patterns of diffusion of innovations among adult populations, and have shown that leaders of diffusion are specific social groups, and that innovations are more likely to spread within certain types of community and less likely to spread within other types. Such fieldwork has provided no evidence for a crucial role of small children as agents of change, except for their possible participation in general dynamics of language variation, similar to other age groups (cf. fn. 2 above).

Factors that influence the spread of an innovation among social groups are connected with identity: speakers want to identify with specific groups, depending on their social prestige and on other factors relating to the speakers' status within a community. Various sociolinguistic variables, such as age and sex, play a role in pushing a certain group to be more or less open to innovations: renownedly, young females are more ready to pick up innovations than males,⁶

and older people are more conservative than younger ones, who are most often among early adopters of innovations (Milroy and Milroy 1985), and thus ultimately responsible for language change (see Chambers 2002 and Chapter 19 in this volume for more detailed discussion).

Note that the invisible hand theory also aims to account for diffusion, but at a closer look it is not completely satisfactory. In the first place, it must be implemented through sociolinguistic and sociocultural observation in order to also account for lack of diffusion, i.e., for the fact that languages may remain stable over generations. As Chambers (2002: 370) remarks, '[g]lobal linguistic changes . . . make sense in the light of global social changes.' In principle, there is no reason why invisible hand processes should happen at certain moments and not at others, hence it is not clear, if we limit our understanding of language change to such mechanisms, why the speed of language change does not always remain the same over time. Besides, the invisible hand theory as formulated in Keller (1994) implies that all speakers innovate in the same way when trying to comply with their communicative needs, and that the strength of common innovation by itself is the only reason for diffusion. However, sociolinguistic research on language variation points to a more complex situation, in which among several competing innovations only some are selected and diffused, and turn into actual change.

Milroy and Milroy also highlight the importance of network ties within a community, and argue that 'linguistic change is *slow* to the extent that the relevant populations are well-established and bound by *strong* ties, whereas it is rapid to the extent that *weak* ties exist in populations.' (1985: 375). Similarly, individuals responsible for innovations have numerous, but loose social ties. These are individuals who 'are not central enough in any group to be constrained by its norm-enforcing mechanisms, but who have weak links with enough groups to pass the variant on to their members' (McMahon 1994: 250). Note that such individuals belong to fringe groups of the population. However, innovations are spread within a population of speakers to such an extent as to eventually become changes only when they are adopted by central members of the population. According to Labov, and based on extensive research in Philadelphia, '[l]eaders of linguistic change are centrally located in social networks which are expanded beyond their immediate locality' (2001: 364).⁷ Labov sees an incongruence in the description of innovators provided by the Milroys: 'the question remains as to why the model provided by the marginal member is copied by the central figure of a network' (*Ibid.*). However, as noted by McMahon, socially central leaders of change, called 'early adopters' by the Milroys, may well pick up innovations from marginal members of the population due to their covert, rather than overt prestige, and because innovation is felt as bearing 'less risk, if the variant involved is already characteristic of speakers on the fringes of the population' (1994: 250).

To sum up, while no substantive evidence has ever been provided for the diffusion of innovations in a child-based theory of language change, sociolinguistic research has described patterns of innovation and diffusion based on concrete observation of dynamics of variation within specific populations of speakers, which provide a more likely explanation of language change.

Note further that sociolinguistic studies on present-day speech communities may be insightful for historical linguistics because they help fill a gap in our knowledge of dead languages or of earlier stages of languages. Social variation is poorly represented in written records: most often, sources available to historical linguists only contain standardized literary varieties, with only few attestations of nonstandard varieties in 'private' documents such as letters and inscriptions written by scarcely educated speakers (see Chapter 1 in this volume). One possible solution is to follow the uniformitarian hypothesis, and assume that variation within present-day speech communities mirrors variation within speech communities in the past: this approach is adopted by variationists, who, following Labov's slogan, use the present to understand the past.

4. Teleology in Language Change

Directionality in language change is a major matter of discussion, and has a number of implications, which in part require an answer to the question whether language change can be viewed as a teleological process.⁸ To tackle this issue, let us start with Kiparsky's well-known claim that 'language practices therapy rather than prophylaxis' (1974a: 328). This idea implies that language change in itself is goal oriented. That the activity of speakers eventually bringing about language change is goal oriented, thus necessarily conscious, is extensively criticized in Lass (1997), and is generally not accepted: as Croft puts it, '[s]peakers have many goals when they use language, but changing the linguistic system is not one of them' (2000: 70). Consequently, if one views language change as goal oriented, one must assume that language has some sort of internal teleology.

Such an assumption is typical of many structuralist inspired theories of change, which view language as a system with an inherent tendency toward keeping or restoring its symmetry. For example, Martinet's theory of the 'empty hole' (cf. Martinet 1952) implies that language systems conform to precise patterns which have a specific internal structure and an internal principle of preservation of their structure. According to Martinet, items such as phonemes are identified based on sets of distinctions which determine the distance between each other; linguistic systems tend to preserve the distance between elements, even if specific differences may change, thus preserving the 'place' of each item in the system. In the same vein, Anttila, one of the most outspoken

proponents of teleology, stated that '[l]anguage is also a teleological or goal-directed system . . . keeping the necessary homeostasis, that is functioning, the language has to change to stay the same, to continue to fill its purpose' (1989: 392–393).

However, such theories find little support from experimental data. Ohala stresses that 'sound change, at least at its very initiation, is not teleological. It does not serve any purpose at all . . . There is . . . much cognitive activity—teleology, in fact—in producing and perceiving speech, but all the evidence we have suggests that this is directed toward *preserving*, not replacing, pronunciation norms' (2003: 683). Thus, what is goal oriented is the activity of speakers trying to be successful in communication, not change in itself. Note that Ohala's indication of an activity directed toward preserving pronunciation norms must not be understood as an argument in favor of therapeutic change. It does not imply that, once a change has happened in spite of the effort toward preservation, the next effort will be toward restoration of the preceding state or its equivalent. As Lass (1997) has shown on the example of the Greek *-s-* future, assuming a therapeutic or prophylactic change is largely arbitrary (see further Croft 2000: 66–68).

Croft (2000: 4) warns against the 'reification or hypostatization of languages . . . Languages don't change; people change language through their actions.' Indeed, it seems better to avoid assuming any immanent principles inherent in language, which seem to imply that language has an existence outside the speech community. This does not necessarily mean that language change does not proceed in a certain direction. Croft rejects the idea that 'drift,' as defined by Sapir (1921), may exist at all. Similarly, Lass (1987) wonders how one can positively demonstrate that the unconscious selection assumed by Sapir on the side of speakers actually exists. From an opposite angle, Andersen (2008: 34) writes: 'One of the most remarkable facts about linguistic change is its determinate direction. Changes that we can observe in real time—for instance, as they are attested in the textual record—typically progress consistently in a single direction, sometimes over long periods of time.' Keller (1994: 112) suggests that, while no drift in the Sapirian sense can be assumed as 'the reason why a certain event happens,' i.e., it cannot be considered innate in language, invisible hand processes may result in a drift. In other words, the perspective is reversed in Keller's understanding of drift: a drift is not the pre-existing reason which leads the directionality of change, but rather the a posteriori observation of a change brought about by the unconsciously converging activity of speakers who conform to certain principles, such as the principle of economy and so on (1994: 113). Note that this theory is in accordance with Ohala's experimental observations of phonetic variation.

Teleological explanations of language change are sometimes considered the same as functional explanations (see e.g. Lass 1997: 352–369). Croft (2000: 65)

distinguishes between 'systemic functional,' that is teleological, explanations, and 'functional proper,' which refer to intentional mechanisms. Keller (1994, 1997) argues that 'functional' must not be confused with 'teleological,' and should be used in reference to speakers, rather than to language: '[t]he claim that speakers have goals is correct, while the claim that language has a goal is wrong' (1997: 14). Thus, to the extent that individual variants may be said to be functional to the achievement of certain goals, they are more likely to generate language change through invisible hand processes: in this sense, explanations of language change may also be said to be functional.

5. External Causes

Language change is often brought about by contact between speakers of different languages or dialects, rather than by variation internal to a given speech community. Such changes are said to be due to external causes. Contact between populations who speak different languages involve extensive bilingualism: accordingly, Weinreich (1953) pointed to the crucial role of bilingual speakers as the locus for language contact. However, high prestige languages may influence other languages without necessarily involving bilingualism (see Chapter 18 for discussion).

Historical research on contact-induced language change relies on more documentation than historical research on social variation, since we often know what languages have been in contact with each other, and the spread of bilingualism or multilingualism within populations in the past is often attested indirectly or even directly. On the other hand, our knowledge of language contact in the past is limited by the fact that some languages have left no written documentation. Thus, interference from substratum is often hard to evaluate, when the substratum is constituted by an unknown language.

Whether changes brought about by contact differ in type from changes brought about by internal causes is a matter of discussion. According to Labov (1994), phonological change 'from below,' i.e., starting within a speech community, results in higher regularity (it corresponds to 'neogrammarian' change) than phonological change 'from above,' i.e., deriving from contact, which takes the form of lexical diffusion. This view is criticized by Milroy (1999), who remarks that 'no empirical study so far carried out has actually demonstrated that sound change can arise spontaneously within a variety' (1999: 24). Milroy further points out that specific changes are thought to be internally caused when there is no evidence for external causation, i.e., for language contact. These remarks imply that all changes are ultimately due to contact, which, as we will see in the following section, is an arguable position, depending on what one means when one speaks of 'a variety.'

According to Trudgill (1989), contact induced changes and changes which initiate inside a low-contact speech community have different outputs. Trudgill observes that koineization is typical of contact situations. Koinés 'compromise varieties among diverse dialects of the same language' (Mufwene 2001: 3); they tend to lose 'marked or complex variants' in favor of 'unmarked, or simpler forms' (Trudgill 1989: 228–229), a fact already noted by Jakobson (cf. Jakobson 1929). Trudgill regards the high number of adults acquiring a second language in contact situations as the cause for simplification. The role of learners in bilingual situations, and the bearing of imperfect learning on language change is also highlighted in Thomason (2003). Thomason remarks that features introduced by learners into a T(arget) L(anguage) are mostly phonological and syntactic, rather than lexical, and that one of the effects of imperfect learning will be that learners 'fail to learn some features of the TL, usually features that are hard to learn for reasons of universal markedness' (2003: 692). This observation is in accordance with Trudgill's remarks on simplification.

However, there appears to be more than simplification in the effects of language contact and bi- or multilingualism. In the first place, a role is also played by typological distance of the TL from the learners' language, not necessarily connected with markedness (Thomason 2003: 692). Besides, specific types of linguistic areas seem to favor varying degrees of linguistic diversity and complexity, as indicated in Nichols (1992). By comparing what she calls 'spread zones' with 'residual zones,' Nichols argues that the former are characterized, among other features, by low genetic density, low structural diversity, rapid spread of languages and language succession and use of lingua francas (1992: 16–17), while typical features of residual zones are high genetic density, high structural diversity, no appreciable spread of languages and hence no language succession, and no lingua franca (1992: 21). This is not to say that residual zones, a typical example being the Caucasus, are not also characterized by language contact, and bi- or multilingualism: much to the contrary, the absence of a lingua franca implies (often extensive) multilingualism for interethnic communication; accordingly, residual zones usually display some clear areal features. Note further that, according to Nichols, traditional laws of dialect geography (see Chapter 18 in this volume) are reversed in residual zones, where innovations come from the periphery, rather than from the center (1992: 22). In 'normal' situations, the periphery of an area is only partly reached by innovations developing from its center, and often displays typical features of isolated areas, as argued in Andersen (1988). According to Andersen, such peripheral and isolated areas display a tendency toward higher phonological elaboration, i.e., higher complexity, a feature also typical of residual zones. However, even though residual zones, as described by Nichols, are certainly isolated from spread zones, languages spoken within residual zones do not seem to be isolated from one another. Obviously, Nichols and Andersen are not speaking of

the same types of area, since Andersen refers to the periphery of dialectal areas, and to peripheral or isolated dialects of the same root language spoken in the central area, rather than of areas of high genetic density. However, the parallel shows that it is at least doubtful that one can establish a correlation between lack of contact-induced change and increasing complexity.

6. Do Internal Causes Exist?

Within the sociolinguistic tradition of historical linguistics, the strongest advocate for a distinction between externally and internally motivated change is Labov (cf. above, section 5). Summarizing his argument in favor of a difference between change in low-contact vs. high-contact situations, Trudgill states that 'when it comes to contact, the present is not like the past' (1989: 236), and indicates the study of change in isolated communities as a possible source for understanding language change in the past, since now 'there are simply many more people around' (1989: 233). Trudgill even suggests that learning by children may play a role in language change within low-contact varieties (1989: 237), while it does not within high-contact varieties.

However, what we know about the past does not indicate that language contact played a lesser role than in the present. To the contrary, multilingualism was widespread in Ancient Near East, as well as in the Roman Empire, only to mention two examples; besides, as noted in the preceding section, isolated areas may be such from the point of view of speakers of outer communities, but this does not imply lack of contact within them. Contrary to Trudgill, Milroy (1999: 21) thinks that 'more recent changes are more likely to be accepted as externally influenced—simply because more information about different varieties and contact between languages is available.'

While the extent to which contact played a role on language change in the past may remain in part unknown due to poor historical evidence, it remains true that, from the point of view of diffusion, there seems to be no difference between internally and externally initiated change: 'if an innovation starts with a speaker or speakers, its acceptance into the language system depends on its being passed from the innovators to other groups of speakers. The whole process of linguistic change is therefore the same process of linguistic borrowing' (Milroy 1999: 23).

Besides, change starting inside a speech community is ultimately due to contact between social dialects or even between individual idiolects. Even though we do not call each individual dialect a language, and accept the existence of speech communities as communities, i.e. as (parts of) societies 'defined in terms of a domain of shared expertise' (Croft 2000: 93), it remains true that 'any communal language exists because speakers using systems that are not

necessarily identical interact with one another. In the process they accommodate each other in their speech habits' (Mufwene 2001: 32–33). The extent to which one refers to linguistic systems as not identical depends on one's point of view, as Mufwene points out:

while discussing a language such as English brought to North America from the British Isles, dialectal variation can be considered internal ecology. On the other hand, the same variation can be considered external ecology if the analyst focused only on the London dialect coming in contact with British South Western English in . . . Virginia. (2001: 30)

Thus, in spite of varying social factors and different relations between social groups in case of language contact and in case of internal variation, mutual accommodation of speakers and hearers is the ultimate cause of change. The fact that an innovation is accepted within a community depends on the prestige of innovators and early adopters, and may be seen as a function of the willingness of a speaker/hearer to accommodate another speaker/hearer in interaction, and thus to behave as she/he thinks the other person would behave (cf. Keller 1994). Obviously, contact between distant varieties implies, as shown in section 5, an important role of adult learners. However, speakers who, within a given speech community, try to conform to a high prestige variety of their own language are similar to language learners: the extent to which they may be more successful, and thus bring about less change in the target variety than language learners would do in the target language, should be measured in terms of quantity, rather than quality.

Notes

1. I thank Henning Andersen, Vit Bubenik, Bill Croft, Paolo Di Giovine and Maria Freddi for comments and discussion on earlier drafts of this chapter.
2. Note that proponents of the child-based theory also think that reanalysis due to language contact brings about change mostly, if not only, at the stage of language acquisition, as shown, e.g. in Lightfoot (1999: 158). This view is also assumed by Andersen (1988).
3. Indeed, there rather appears to exist counterevidence to the child-based theory of change, as shown in J. Roberts (1997). Recent research in language variation shows that small children participate in variation and may pick up innovations, just as adults do, as argued in J. Roberts (2002), who also indicates the need to study actual input from caretakers to whom children are exposed.
4. See Janda and Joseph (2003b) for a theory of sound change based on findings from experimental phonetics, which also provides an explanation of how 'mini-sound change' can turn into real changes based on social factors favoring diffusion.
5. Recently Croft (2010) has argued that grammatical change such as grammaticalization, too, is based on innovations drawn from a pool of synchronic variation, and that,

similar to sound change, innovations are much more frequent than usually assumed for grammar. Thus, Janda and Joseph's (2003b) explanation of the development of 'real' change from frequent variation could also be implemented for morphosyntactic change. Note, however, that motivations usually adduced for innovation in grammatical forms and constructions are more of the conscious type, basically being the speaker's intention to be expressive or to be understood (cf. Croft 2010).

6. The role of women in the diffusion of innovations is complex, and can be summarized in Labov's 'Gender Paradox': '[w]omen deviate less than men from linguistic norms when the deviations are overtly proscribed, but more than men when the deviations are NOT proscribed' (2001: 367). For a thorough discussion of the issue, see Labov (2001 ch. 11).
7. Labov (2001: 385–411) offers portraits of two leaders of linguistic innovation, pointing toward the importance of their formative years for their attitude as innovators. From Labov's findings, adolescents emerge as the most important actors in the diffusion of innovations.
8. This is not to say that all theories about directionality in language change have to do with teleology: e.g., grammaticalization is often considered to be unidirectional, possible counterexamples have been adduced and there is an ongoing discussion (see Traugott this volume and Norde 2009), but both proponents and critics of unidirectionality by the most part would not subscribe to the idea that language change is a teleological process. In this chapter, I only discuss the issue of directionality as connected with teleology, since the question about possible directionality of specific mechanisms of change does not have a direct bearing on the present discussion, which concerns causation in language change.

A–Z Historical Linguistics

This glossary was compiled by the editors in collaboration with the contributors. Contributors provided draft definitions of the key terms relevant for each chapter; it was then the editors' responsibility to unify and complete the definitions, giving them uniformity, as well as to decide which terms should be left out because they were relevant for synchronic description, rather than for diachronic analysis. The glossary is not intended as an exhaustive collection of all key terms and concepts relevant for historical linguistics: its scope is limited to the present volume, thus, some terms and concepts that are not used here, though important, are not included.

Abjad: See writing.

Abugida: See writing.

Ablaut/apophony/gradation: Vowel alternation in the root as in Greek *lég-ō* 'I speak' / *lóg-os* 'word,' Latin *teg-ō* 'I cover' / *tog-a* 'garment.'

Acrophonic principle: Use of a former pictogram as a sound (phonogram) representing its initial portion in the word (C or CV).

Age-graded change: Linguistic adjustments that represent maturational stages and are repeated in successive generations, as in the replacement of nursery words by adult terms at the end of childhood.

Agglutinationstheorie/'agglutination theory': Franz Bopp's theory (1816) according to which bound morphemes such as verb suffixes originated from earlier free morphemes (auxiliaries, pronouns).

Alphabet: See writing.

Alphasyllabic system: See writing.

Amelioriation: See melioration.

Analogical change: Change in word structure under the influence of semantically, formally or functionally related words. It results from an attempt to make some linguistic forms more similar to other linguistic forms in some respect.

Analogical extension: The spread of a linguistic pattern to items which were formerly not subject to it.

Analogy

- *Exemplar analogy*: The (partial) matching of one property of an expression with another (e.g. of plural in *feet* with the more generally used –s plural, resulting in *foots*).
- *Four-part (or proportional) analogy*: Any analogical change which can be schematically represented by means of a proportion of the form $A : B = C : X$, where X is the analogical creation.
- *Laws of analogy*: Putative principles governing the direction in which analogical change usually works (cf. Kuryłowicz 1947 and Mańczak 1958). They must be understood as tendencies rather than laws, because (a) counterexamples occur and (b) analogical change usually takes place in a word-by-word fashion, intrinsically displaying the features of a tendency rather than the regularity of a law.
- *Non-exemplar analogy*: The extension of patterns or rules (e.g. of the transitive pattern to non-agentive subjects in *This room sleeps eight*).

Apparent-time hypothesis: Historical inferences about language change or stability based on synchronous surveys of subjects of different ages, on the assumption that, other things being equal, people retain dialect and accent features acquired in their formative years throughout their lives.

Apomorphy: A linguistic feature developed within a language after its split from some ancestral language, also known as innovation.

ASJP (Automated Similarity Judgment Program): A project which pursues automated language lexicostatistics and other investigations based on a worldwide linguistic database.

Assimilation: A process by which segments or strings of sounds become more like one another, by sharing some characteristic(s).

Backformation: A type of analogical creation in which the speaker infers a pseudo-derivational relation between certain items and accordingly establishes a nonexistent derivational base by removing from a longer word a phonological sequence taken to correspond to a morpheme.

Bayesian inference: A type of phylogenetic algorithm that works by fitting trees to data, finding the ones that fit the best.

Bioprogram: An innate, universal proclivity, claimed by Derek Bickerton (1981), which causes first-language learners to follow similar patterns in the construction of creole languages, whatever their substratal source.

Bleaching: Loss of specific lexical meaning in grammaticalization, balanced by enrichment of grammatical meaning, e.g. loss of veridical meaning, gain of degree meaning by *very* ‘true’ as the adjective was reinterpreted as an adverb.

Borrowing: The incorporation of external features into another variety, without the occurrence of language shift; called ‘contact with language maintenance’ in Thomason and Kaufman (1988).

Broadening: The process by which a word or expression comes to have a more general meaning.

Calque: The process by which a new meaning is transferred to a word or linguistic expression in a target language because it shared a former meaning with a word or linguistic expression from the source language.

Chain shift: An interlocking series of changes, where an individual segment takes on some features or other characteristics of a related one, which in turn interacts in similar fashion with a further segment.

Character: A certain linguistic feature used as a criterion for language classification.

Character-based language classification: Classification based on the presence or absence of a certain kind of linguistic feature (see *distance-based language classification*).

Character state: The presence or absence of a certain binary character or the specific value of a multistate character.

Charlemagne Sprachbund: Linguistic area consisting of French, German and Dutch, with Northern Italian and Polish closely connected; proposed by Johan van der Auwera (1998b).

Cognates: Related words, i.e., words that share a common etymon.

Comparative method: A method of reconstruction in historical linguistics based on comparison of cognate forms in related languages.

Compensatory lengthening: A sound change in which a consonant is lost and an adjacent vowel is lengthened, thus preserving the original temporal value of the sequence.

Contagion: The process by which the meaning of a word is transferred to another because they appear together frequently or in many contexts.

Contamination: Any analogical change in which a subpart of the form of a linguistic item is unsystematically remolded under the influence of a subpart of the form of another item associated with it.

Corpus: A database of spoken or written texts selected according to some set of criteria such as text-type (conversation, news release) or historical age. Can be used as the starting-point for descriptive analysis, or for verifying hypotheses. Often electronically accessible, sometimes parsed.

Creole: Traditionally defined as a pidgin which has acquired native speakers.

Creole continuum: 'A spectrum of variation linking the more standard end of the range (the acrolect) with the conservative creole extreme (the basilect).' (Winford 1993: 7)

Creole prototype: A hypothesis developed by John McWhorter (1998, 2006) that creole genesis entails grammatical simplification, since a break in transmission occurs when 'new languages' are formed.

Decreolization: Structural convergence of a creole variety towards a standard language or other prestige variety, usually lexically related.

Degeneration. See pejoration.

Degrammaticalization: A relatively rare, idiosyncratic and usually one-step change whereby a grammatical form becomes more autonomous (e.g. Pennsylvania German auxiliary *wotte* preterite subjunctive of modal *welle* 'want' 'upgraded' > main verb > *wott* 'wish'). In the case it concerns a bound morpheme, degrammaticalization is also called 'demorphologization,' and results in any type of change by which a grammatical affix changes into a clitic or word or into expression elements with no grammatical content.

Demorphologization. See degrammaticalization.

Desemantization. See bleaching.

Dialect continuum. See geolinguistic continuum.

Dialect geography: Systematic study of regional variation in accents and dialects.

Dialectology: Systematic study of variation in accents and dialects. Traditionally, dialectology was sometimes used to refer to dialect geography (q.v.) but in contemporary usage it is used generically for sociolinguistic variation as well as regional variation.

Dissimilation: A process by which segments or strings of sounds become less like each other, by one losing a previously shared feature.

Distance-based language classification: Classification based on some measure of pairwise differences among languages (see *character-based language classification*).

Drift: The term captures the idea of directionality in language change (without being limited to it). In the words of Edward Sapir (1921) ‘Language moves down time in a current of its own making. It has a drift . . . moving away from any assignable norm.’

Dryer genus: Group of uncontroversially related languages whose common ancestor was spoken maximally 4,000 years ago (a definition introduced by Matthew Dryer).

Edit distance: See Levenshtein distance.

Elevation: See melioration.

Epenthesis: The creation or insertion of a new segment into a string of sounds.

Etymology: The study of the origin of words. More specifically, etymology describes the process which produces a new sequence of phonemes and assigns a meaning to it using given vocabulary and given grammatical means, in order to meet a requirement which emerges.

Exaggeration. See hyperbole.

Expression reduction (also *erosion*, *attrition* or *phonological reduction*): Change by which a grammatical word, clitic or affix loses phonological material.

Extention: The surface manifestation of a pattern which does not involve immediate or intrinsic modification of underlying structure (Harris and Campbell 1995: 51). See also broadening.

External language classification: The joining of genealogically related languages into maximally inclusive groups.

Folk etymology: The restructuring of a synchronically unanalyzable word or expression, so that its form allows for a semantic connection with other lexical items (e.g. if one reads ‘life’ into *lifeguard* which originally meant ‘bodyguard’). Also called ‘popular etymology.’

Fortition: Strengthening, an increase in consonant-like character (or a decrease in sonority) of a sound, typical of prosodically prominent positions, like onsets of stressed syllables.

Generalization. See broadening.

Geolinguistic continuum: Gradations of dialect difference from one site to contiguous sites in a region.

Glottalic theory: A new reconstruction of the system of Indo-European obstruents, proposed by Thomas V. Gamkrelidze and Vjacheslav V. Ivanov in 1971, and Paul Hopper in 1973, which includes a set of ejective consonants (**pʼ, tʼ, kʼ*) in the place of traditionally reconstructed voiced stops.

Gradualness: Change that occurs via discrete micro-steps. Sometimes used to refer to propagation across structural types or across speakers.

Grammaticalization path: A schematic representation of one of several likely trajectories, either formal or semantic, that a grammaticalization change may undergo (e.g. main verb > auxiliary > clitic > affix; desire > intention > purpose).

Grammaticalization: A macro-change comprising changes in content (grammation or regrammation), content syntax (upgrading), expression (reduction) and expression syntax (integration). Grammaticalization is the change by which grammatical forms arise: a frequently used lexical item or construction is assigned a grammatical function (grammation); in the meantime, it loses freedom in word order, undergoes semantic bleaching (often implying an increase in scope, or upgrading) and phonological reduction and may end up as a bound morpheme (integration; e.g. lexical main verb *will* ‘intend’ > auxiliary verb > clitic ‘*ll*). Grammaticalization may also concern grammatical items which are assigned a more grammatical function (regrammation). The term was introduced by Antoine Meillet in 1912 without overt reference to Bopp’s *Agglutinationstheorie* of 1816.

Grammation. See grammaticalization.

Grassmann’s Law: Dissimilatory process by which the first in a sequence of two aspirated stops separated by intervening sound(s) loses its aspiration (in Sanskrit and Greek).

Gravity Model: Model proposed by Peter Trudgill (1983) to account for the spread of linguistic features from one large urban area to the next largest neighboring urban area, skipping over intervening territory.

Grimm’s Law/First Germanic Sound Shift: Several changes by which PIE voiceless stops became voiceless fricatives, PIE voiced stops voiceless stops, and PIE voiced aspirates voiced stops (or fricatives depending on their position). It was discovered by the Danish scholar Rasmus Rask (1818) and formulated by Jacob Grimm (1819).

Homonymic clash: A process by which a word comes to be homophone with another resulting in a disturbing homonymy for the language.

Homoplasny: The independent innovation within different languages of a certain linguistic feature.

Humboldt’s universal: Putative principle claiming that in the ideal case one form should correspond to one meaning, which implies a general prediction

for language change towards reducing any sort of (phonological, morphological) alternations (cf. Vennemann 1972b).

Ideography: Use of the pictograms of concrete objects for abstract concepts.

Indo-Hittite hypothesis: The view that Hittite (and Anatolian in general) split away from PIE at a much earlier time than the remaining languages, formulated by Edgar Sturtevant in 1926.

Integration. See grammaticalization.

Internal language classification: The partitioning of a language family into smaller units.

Internal reconstruction: A method of reconstructing earlier stages of a language by examining just features of a language at a single synchronic stage and hypothesizing how those features could have arisen.

Intersubjectification: The recruitment of meanings to signal the speaker's attention to the addressee (e.g. development of addressee honorifics in Japanese).

Invisible hand: A metaphor originally introduced by Adam Smith (1723–1790) to describe the self-regulating mechanisms of free market, by which riches are redistributed with no intervention of explicit regulations. It was extended to language change by Rudi Keller in 1990 to describe how individual linguistic behaviors intended to facilitate communication unintentionally converge in the same direction and end up determining language change.

Invited inferencing: Manipulation by the speaker of pragmatic meanings arising out of linguistic context that may lead to semantic change (e.g. causal meanings arising out of sequential meaning were coded/conventionalized in the case of *since* [originally 'after' > 'after,' 'because'], but not of *after*).

Language contact: Bi- or multilingual interaction between languages and their speakers; secondarily, also the results of this interaction.

Language family: A maximally inclusive group of genealogically related languages.

Laryngeal theory: The reconstruction of a set of three consonants (or 'laryngeals') for PIE, partly preserved as such only in Anatolian, while they disappeared in the other languages, leaving some reflexes on the vowels. The first version of this theory is Saussure's idea of 'coefficients sonantiques'; the name 'laryngeal' was introduced on the hypothesis that the reconstructed

consonants should be equated with the Semitic laryngals (*ʔ, h, ʕ*). The exact phonetic value of these sounds is still a matter of debate.

Lateral transfer: The borrowing of linguistic features (e.g. words) among languages.

Lenition: Weakening, an increase in vowel-like character (or sonority) of a sound, often in the reduction of segments, characteristic of ‘weak’ prosodic positions, like unstressed syllables.

Leveling: The complete or partial elimination of morphophonemic alternations within paradigms.

Levenshtein distance: The minimal number of substitutions, deletions and insertions of phonemes which it takes to get from one word to another (also known as ‘edit distance’).

Lexical diffusion: The spread of sound change on a word-by-word rather than sound-by-sound basis, thus taking place at different times independently in different words. Lexical diffusion results in ‘irregular’ change, thus contrasting with Neogrammarian change (q.v.), which is regular by definition. That sound change could operate by lexical diffusion was first suggested by Hugo Schuchardt in 1885.

Lexicalization: The change whereby a phrase or word form is used as a new contentful form (‘lexical item’) with formal and semantic properties that are componentially not fully analyzable; involves univerbation and gradual, often semantically idiosyncratic change (e.g. *hlaf dige* ‘loaf kneeder’ [cf. *dough*] > *lady*).

Lexicostatistics: An approach developed by Morris Swadesh (1909–1967), whereby languages are classified according to the number of shared *cognates* pertaining to a fixed set of meanings.

Linguistic area: Usually considered equivalent to ‘Sprachbund.’

Litotes: The use of a more attenuated expression than it would be expected.

Loan translation. See *calque*.

Melioration: A change of meaning due to the positive connotations of a form.

Merger: The collapse of previously distinct sounds.

Metanalysis: Reanalysis of a sequence of expressions by which a boundary between expressions is displaced or lost; contrast univerbation.

Metathesis: A change in the linear order of segments in a string.

- Metatypy:** The syntactic and semantic reordering of a replica language, morph-by-morph, based upon the patterns of the model language, with a concomitant typological realignment in the replica language. Term coined by Ross (1996).
- Morphological change:** Change in the structure of words, including the development of new affixes.
- Morphologization from above:** Change by which a grammatical expression becomes a clitic or an inflectional affix.
- Morphologization from below:** Change by which phonological features, segments or alternations that are already part of word forms are reanalyzed as expressions of grammatical content.
- Natural genera:** A level of subgrouping within a *language family* which is identifiable by the structure of the phylogeny to which it belongs.
- Neighbor-Joining:** A phylogenetic algorithm which is similar to *UPGMA* but entails certain mathematical operations on the distance matrix prior to the construction of the tree.
- Neogrammarian sound change:** Sound change applying to all relevant environments and exhibiting complete regularity. The principle by which sound change is regular was formulated by Hermann Osthoff and Karl Brugmann in 1878, who stated that ‘sound laws operate without exceptions.’ (see sound law).
- Neogrammarians/Junggrammatiker:** A group of young linguists working at the University of Leipzig during the second half of the nineteenth century. The leading members of the group were Karl Brugmann, August Leskien, Hermann Osthoff and Berthold Delbrück.
- Neolinguistica:** An Italian school of historical linguistics (ca. 1920–1945) which focused on geographical and areal features of linguistic change.
- NORMs:** Prototypical subjects of traditional dialect geography surveys, from the acronym for nonmobile older rural males, an alternative for archaic terms ‘peasants’ or ‘folk.’
- Outgroup:** A language used to root a tree; typically a distant relative to the languages that appear on the leaves of the tree.
- Perfect phylogenetic network:** A phylogeny established on the basis of characters that never undergo the same changes along different branches of a tree.

Phonetic transference: Use of a pictogram (stylized picture of a concrete object) for an abstract concept based on their homophony. See also semantic transference.

Phonological change: Modification of individual speech sounds that brings about change in the number or in the distribution of phonemes.

- *Phonological change from below:* Change arising within a certain speech community.
- *Phonological change from above:* Change arising from language contact.

Phylogeny: The structure of genealogical relations among a set of languages, often depicted as a family tree.

Pictogram: Stylized picture of a concrete object.

Pidgin: A contact vernacular which arises among speakers of different languages for purposes of trade, forced labor or under other circumstances of restricted contact. The word derived from English *business*, and first applied to Chinese Pidgin English.

Plesiomorphy: A linguistic feature inherited by a language from an ancestral language, also known as retention.

Proto-language: A reconstructed ancestral source language for a set of related languages.

Reanalysis: The assignment to a surface string of an underlying structure different from the structure underlying the production of the string. This type of change does not involve any immediate or intrinsic modification of its surface manifestation. In syntax, morphology and phonology, boundary loss, creation and shift ('rebracketing'), as in *hamburg-er* > *ham-burger*, *a naperon* > *an apron*. In semantics, coding of originally implied meanings (e.g. *silly* 'innocent' > 'stupid,' *during* 'lasting' > 'in the course of'). According to some, reanalysis is only possible during language acquisition.

Rebus principle: An extension of the code of phonetic transference to parts of words. It is important for writing names.

Reduction: See grammaticalization.

Regrammation: See grammaticalization.

Relexification: The replacement of lexical items in a pidgin by equivalent forms in another language, e.g., the replacement of Portuguese-pidgin-based forms with Spanish forms in Papiamentu.

Replication: The introduction of patterns of grammaticalization from a model to a replica language (cf. Heine and Kuteva 2005).

Reticulation: See *Split Decomposition*.

Rooted tree: A depiction of a phylogeny which includes an ancestral language or some outgroup (see ‘unrooted tree’).

Semantic transference: The principle by which pictograms (stylized pictures of concrete objects) were transferred to abstract concepts. See also phonetic transference.

Shift: ‘Substratum interference’; the adoption of a new language by speakers, with resultant interference from the L1, especially affecting the phonology and syntax, but often not the lexicon; called ‘contact with language shift’ in Thomason and Kaufman (1988).

Sociolinguistics: Systematic study of variation in accents and dialects correlated with social attributes such as social class, age, sex and ethnicity, or with contextual factors such as style and register.

Sound change: Change in pronunciation and phonological systems conditioned by phonetic or phonological factors.

Sound law/Lautgesetz: The Neogrammarians (q.v.) linked linguistics with the rigorous sciences explicating by laws and viewed ‘sound changes’ as exceptionless ‘sound laws.’

Split: A change that redistributes some occurrences of a sound to another existing sound (primary) or increases the number of sounds in the inventory (secondary).

Split decomposition: A phylogenetic algorithm that leads to the depiction of networks reflecting phylogenetically conflicting information (also known as ‘reticulations’).

Sprachbund: A group of contiguous languages that share a set of structural correspondences not inherited from a common ancestor but developed by means of long-term contact; term coined by Nikolai Trubetzkoy in 1928, fairly equivalent to ‘linguistic area.’

Stammbaumtheorie (Family Tree Theory): Theory developed by August Schleicher (1860) to represent the genealogical relationship of related Indo-European languages.

Subjectification: The recruitment of meanings to encode the speaker’s beliefs or attitude toward what is said (e.g. the epistemic *must* in *They must be married* ‘I conclude they are married’ derived from the deontic meaning ‘They ought to get married’). In cognitive grammar used more narrowly to refer to the development of raising and other constructions in which

the syntactic (quasi)-subject is different from the conceptualizing subject (e.g. *There is going to be an earthquake within the next thirty years*).

Substratum: The L1 of a group of speakers who have shifted to another language, but who retain phonological and syntactic traces of the older layer.

Syncretism: A type of morphological change by which two distinct values of a certain grammatical category (e.g. two cases) merge both formally and functionally. In several Indo-European languages case syncretism is a well-attested and well-studied phenomenon, by which case systems underwent reduction when case distinctions were lost, based on a process of merger motivated by (initially partial) overlap in usage. In synchronic description, a type of grammatical homonymy in which identity of expression is motivated by (diagrams) partial identity of content.

Syntactic change: Change in the syntactic structure of language.

Synplesiomorphy: A linguistic feature inherited by a set of languages from the same common ancestor, also known as shared retention.

Synapomorphy: A linguistic feature shared across a set of languages which developed within their common ancestor after its split from some further removed ancestral language, also known as shared innovation.

Taboo: A taboo word indicates an entity which should not be mentioned for social or cultural reasons. Taboo words are thus replaced by socially more acceptable words (e.g. *bear*, originally 'the brown one').

Teleology: The view that final causes of language change depend on the tendency of a system to preserve its structure.

Tiberian/masoretic system: The system for marking short vowels in Hebrew (invented *ca.* 800 CE in Tiberias) used in printed biblical texts.

Tokens: Numerical units used in combination with pictograms.

Tonogenesis: The origination of tone or of other tone-like phenomena.

Tree diagram/Family tree model/Stammbaum: Genetic classification of languages based on their filial descent from a common proto-language.

Umlaut/Metaphony/Mutation: (Typically) assimilation of a root vowel to a vowel occurring in a suffix.

Unidirectionality: The hypothesis, largely associated with grammaticalization, that more complex structures tend to become less complex and more schematic over time. The change of *be going to* 'motion with a purpose' to

be gonna ‘future’ exemplifies reduction of two clauses into one, reduction of phonological and lexical specificity, and increase in abstractness.

Univerbation: Reanalysis of a word or clitic as an affix and hence part of a wordform. Also ‘integration’, ‘boundary reduction’; contrast ‘metanalysis’.

Univerbation: The fusion of two or more morphemes into one (e.g. *hus bonda* ‘house freeholder’ > *husband*, *all + ready* ‘fully prepared’ > *already*).

Unrooted tree: A depiction of a phylogeny which excludes an ancestral language or some ‘outgroup’ (see ‘rooted tree’).

UPGMA (Unweighted Pair Group Method with Arithmetic Means): A simple phylogenetic algorithm which works by building a tree bottom-up, starting with the joining of the two most similar languages.

Upgrading. See grammaticalization.

Verner’s Law: Verner’s Law operates in relation to Grimm’s Law on Proto-Germanic fricatives (plus *s*) under three conditions: They are not initial, they occur in voicing environment and the PIE accent was not on the immediately preceding syllable. It was formulated in 1877 by the Danish linguist Karl Verner.

Wackernagel’s Law: Tendency for clitics to appear in sentential/phrasal second position (articulated by Jacob Wackernagel in 1892).

Wellentheorie (Wave Theory): Theory developed by Johannes Schmidt (1872) in response to Schleicher’s Stammbaumtheorie (Family Tree Theory) (1860), representing linguistic innovation as analogous to the movement of waves emanating from a central point in a pool.

Writing systems:

Abjad: A type of writing that denotes only consonants (e.g. Phoenician, Arabic).

Abugida: A type of writing whose basic characters denote consonants followed by diacritics denoting vowels (e.g. Geez, Amharic).

Alphabetic: A type of writing that denotes consonants and vowels (e.g. Ancient Greek, Latin).

Alphasyllabic: A type of writing in which vowels are denoted by diacritics not all of which occur in a linear order (e.g. Sanskrit, Hindi).

Logosyllabic: A type of writing whose characters denote morphemes with a subset of characters that can be used for their phonetic values without regard for their semantic values (e.g. Sumerian, Chinese).

Syllab(ograph)ic: A type of writing whose characters denote syllables with no graphic similarity between characters denoting phonetically similar syllables (e.g. Mycenaean Greek, Japanese katakana and hiragana).

Zero-grade: A particular ablaut value in Indo-European forms in which a vowel is deleted altogether.

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