HISTORICAL LINGUISTICS

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1. Introduction

One remarkably striking observation about language, seemingly trivial but actually quite important, is that languages change through time. It is at least conceivable that language could remain unchanged over time, as is the case with some other human institutions, e.g. various tabus or the rules to come games, and with some aspects of human communication systems, e.g. Morse Code or the value of a smile as a nonverbal signal,[1] but the facts tell us otherwise.

The mutability of languages can be demonstrated empirically through a comparison of a single language at different stages in its history. For instance, (1) below provides first lines of some great works from three periods of English: Old English as represented by Caedmon's hymn of the 7th century, Middle English as represented by Chaucer's Prologue to the *Canterbury Tales* from the late 14th century, and early Modern English as represented by Shakespeare's *Othello* from the early 17th century:

(1) English at various stages in its history

[1]See Ohala 1980, 1994:332-335 on the possible origins of smiling and thus its functional stability over the ages.

a. **Nū wē sculon herian heofon-rīces Weard** .....(Caedmon, *Hymn* , c.660)

'Now we ought to praise the guardian of the kingdom of heaven'

b. **Whan that Aprille** with its **shoures soote** (Chaucer, *Canterbury Tales*, c.1400)

'When April with its sweet showers ...'

c. **Tush**, never tell me! I take it much unkindly that **thou**, Iago,
who **hast** had my purse as if the strings were **thine**, **shouldst**
know of this. (Shakespeare, *Othello* (1604))

'Bah, never tell me! I take it much unkindly that you, Iago, who has had my purse as if the strings were yours, should know of this'

The boldface in (1) marks those features — pronunciations (as reflected in the spelling), words, sentence and phrasal constructions, and the like — which are not part of contemporary English usage. As the translations show, the differences are considerable and noticeable. For instance, the long monophthongal vowels of *nū* and *wē* in (1a) — assuming that such is the correct interpretation of the spelling — are pronounced as diphthongs in their modern counterparts *now* and *we*, respectively; *sculon* in (1a) shows a plural form absent in its modern counterpart *shall*; *whan that* in (1b) has two subordinating elements (a doubly-filled COMP(lementizer) node, in some interpretations) where the modern counterpart *when* has only one; and forms such as *tush*, *thou*, and *hast* of (1c), while marginally possible in present-day English, are certainly not at all usual. Significantly, examples like these, reflecting change in the language over a period of some 1300 years, can be found in language after language for which records prior to the contemporary period exist; nor must the time-depth be great to reflect change — comparing Mark Twain's 19th century usage *I am become* with 20th century *I have become* reveals a change in the selection of auxiliary verbs in the perfect tense of *become* within a span of approximately 100 years, and the

current use of *be like* to introduce direct speech (e.g. *And I'm like "Oh my God!"*) seems to have arisen since the 1970s,[2] and is replacing the earlier colloquial use of *go* (e.g. *And I go "Oh my God!"*).

Moreover, it does not take a trained specialist to be aware of language change. Over the years, again and again, similar observations been made by nonlinguists, offering further support for recognizing the ubiquity of change in language. For instance, Socrates, as reported by Plato in the *Cratylus* (418C) commented on what he (incorrectly) analyzes as a conservative pronunciation on the part of women of his day compared to the pronunciation of others, which he mistakenly saw as innovative:[3]

> You know that our ancesters made good use of the sounds of iota [a vowel letter of the Greek alphabet/BDJ] and delta [a consonant letter], and that is especially true of the women, who are most addicted to preserving old forms of speech. But nowadays people change iota to eta or epsilon [two other vowels], and delta to zeta [another consonant], thinking they have a grander sound. ... For instance, in the earliest times they called day *himéra*, others said *heméra*, and now they say *hēméra*.

As Teodorsson (1979:69) notes, all the evidence known now indicates that *hēméra* is the older pronunciation of 'day' in Ancient Greek, so the proper interpretation of Socrates' observations is that "the i-pronunciation used by women was that of the

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[2]See Schourup 1982/1985 for an early discussion of this innovative use of *be like*. Butters 1980 discusses the extent to which the narrative use of *go* was itself an innovation earlier in the 20th century.

[3]The translation is taken from Fowler 1977.

innovative phonological system" and thus that this innovative prounciation coexisted as part of a change in progress with the more conservative *heméra* and *hēméra*.

And, Chaucer himself remarked on the language of a thousand years before him in a famous passage from *Troilus and Creside* (II.22-28):[4]

> Ye knowe ek that in forme of speche is chaunge
> Withinne a thousand yeer, and wordes tho
> That hadden pris, now wonder nyce and straunge
> Us thinketh hem, and yet thei spake hem so,
> And spedde as wel in love as men now do;
> Ek for to wynnen love in sondry ages,
> In sondry londes, sondry ben usages.

> 'You know also that there is change in the form of speech within a thousand years, and of words though, that had value, now wondrous foolish and strange to us they seem, and yet they spoke them thus, and they prospered as well in love as men now do; also for winning love in various times, in various lands, various were the usages.'

All of these examples thus attest to change being a continuing force in language. Historical linguistics is the branch of linguistics that is concerned with language change in general and with specific changes in languages, and in particular with describing them, with cataloguing them, and ultimately, with explaining them. Thus in addition to looking at language change, historical linguistics is also interested in language history, i.e. in working out the details of how particular languages develop

[4]The translation here is based on the text and notes in Shoaf 1989.

through time. Somewhat paradoxically, a concern for language history means that change is not the only focus of historical linguistics; in the course of time, while virtually all aspects of a language, excepting those that correspond to truly inviolable linguistic universals, can in principle change, some aspects of a language may remain stable and not change. In fact, for some linguists, unchanging elements in a language may provide important clues regarding its (pre)history (see below section 6).

To return to Socrates' linguistic comments in the *Cratylus*, he was really engaging in the observation of language change in the example cited above, since, under Teodorsson's interpretation, he was attending to variation evident synchronically around him in Greece of the 5th century BC. Chaucer, on the other hand, in his musings in *Troilus and Creside*, was engaging in an exercise in language history, by speculating on what earlier stages of English had been like. As should be clear, both types of pursuits have their place in historical linguistics. The study of synchronic variation, though associated with quantitative sociolinguistics (see the chapter by Florian Coulmas), is a window into change in progress, especially on the assumption that an innovation, whether internally-caused or introduced through contact with speakers of other languages, starts in a restricted part of a speech community and then spreads (see below section 5); on the other hand, the study of language history is a window, perhaps a speculative one, into the past, and it is associated with reconstruction of earlier language states and with working out the relationships among languages that give clues to how they came to be as they are. Moreover, in order to understand the history of particular languages, one has to have some assumptions in place as to how languages can change, for otherwise there is no framework for analyzing observed or hypothesized changes, or the movement from one language state, whether attested or hypothesized (i.e. reconstructed), to another.

These two aspects of historical linguistics are linked also by the so-called "Uniformitarian Principle", which states (in the formulation of Hock 1991:630): "The general processes and priniciples which can be noticed in observable history are applicable in all stages of language history". There may well be reason to believe that the bases for this principle are suspect,[5] in that, for instance, processes of change observable in modern urban settings need not be evident or have been operative in pastoral communities of millennia ago. Still, we do know that humans today and humans 4,000 or so years ago are not all that different physically, to judge from burial remains, and emotionally, to judge from themes in ancient literature, so that some parallelism in regard to language behavior would not be unexpected.[6] Moreover, with this principle, observing change in progress in the present day provides insights that can be used for unraveling aspects of language development in the past into which we often have no other basis for insight; that is, with the "Uniformitarian Principle", we are licensed to make educated guesses about the past generated by our study of the present.

2. Framing the Issues

To set the stage for the discussion to follow and by way of framing the various issues to be considered, we turn to five key questions concerning language change, the problems which Weinreich, Herzog, and Labov 1968 say that "a theory of change must solve"; as restated and elaborated by Labov 1982, these problems are: the

[5]See Janda 1999, and Janda & Joseph 2000 for discussion.

[6]See Melchert 1991 for a particularly moving account of the universality of a Hittite king's fears when facing death; Joseph 1998 gives a classroom application of Melchert's insights.

"constraints" problem, the "transition" problem, the "embedding" problem, the "evaluation" problem, and the "actuation" problem.

The "constraints" problem focuses on what general constraints on change, if any, there are that determine possible and impossible changes and directions of change. One side of this problem, as put in the restatement by Labov 1982, focuses on how a solution "would advance our understanding of the causes of change, since each constraint demands an explanation, and that explanation will usually bear on the cause of the change". There is also a purely descriptive side to this question in that knowing the inventory of changes that have occurred is the first step towards understanding what the range of possible changes is and thus what the impossible changes are. In this way, a third side to the "constraints" problem emerges, for it allows for an important connection to be made between diachronic linguistics, the examination of language through time, and synchronic linguistics, the analysis of a language at any given point in time.

One way of stating the goal of (synchronic) linguistic theory is that it aims to characterize the class of possible human languages, thereby ruling out those linguistic states which never occur and are "impossible" human languages. Moreover, the way most linguists have attempted to achieve that synchronic goal is to identify a set of linguistic universals. Now, in doing synchronic analysis we usually identify a "slice" of a language at a particular point in time, but clearly, the "point" in question is arbitrary and can be cut finely or broadly. Thus, while English of the 20th century forms a synchronic "slice" that we can examine, so does Modern English, defined from Shakespeare's time in the late 16th century to the present, and so does English of the 1980's, etc. With this view of synchrony, diachrony can be defined as the

transition through successive, finely-cut synchronic states, and can be schematized as follows:

D	L1	Synchronic Stage 1
I	L2	Synchronic Stage 2
A	L3	Synchronic Stage 3
C	L4	Synchronic Stage 4
H	.	.
R	.	.
O	.	.
N	Ln	Synchronic Stage n
Y	Ln+1	Synchronic Stage n+1

Linguistic universals, assuming they can be determined, hold at each synchronic stage and define "possible" and "impossible" human languages at each stage. Presumably, also, they hold in the transition between synchronic stages, inasmuch as the division between these stages is arbitrary, and diachrony forms a continuum of synchronic stages. Under such a view, therefore, with an appropriate set of universals, the "constraints" problem of determining possible and impossible changes reduces to

the synchronic question of determining possible and impossible human languages. In a sense, then, the two pursuits are the same, and this view of the relationship between synchrony and diachrony makes it clear just how similar they are.

The "transition" problem seeks to answer by what route language changes. The interest here is similar to the view in the above diagram, for a "dynamic perspective" is needed to allow for a seamless movement through successive synchronic states. As Labov 1982 notes, in essence, "solutions to the transition problem can be restated as solutions to the problem, 'How can language change from one state to another without interfering with communication among members of the speech community?'".

There is yet another direction in which this question can be taken, i.e., expressing an interest in the specific paths followed by a change: does a change from X to Z necessarily go through an intermediate stage Y? For example, in the transition from Old English [ē] (as in *wē* in (1a)) to Modern English diphthongal [iy] (as in *we*), must there have been an intermediate stage of [í] or [ey] or the like, or could [ē] become [iy] directly?.

The "embedding" problem focuses on how a given language change is embedded in the surrounding system of linguistic and social relations. This issue on the one hand asks whether there are system-internal conditions that induce or inhibit change. For example, is the packing of several sounds into a relatively small acoustic and articulatory space (as with Serbian voiceless affricates: dental [c], alveo-palatal [č], and palatal [ć]) likely to lead to a loss of some of these distinctions?[7] On the other hand,

[7]As it happens, many Serbian speakers do not have this three-way distinction anymore, so some mergers have occurred here. My thanks to Ronelle Alexander of the University of California, Berkeley for clarification of this point.

since conditions external to the linguistic system, e.g. social unrest, wars, forced migrations, etc., could also conceivably contribute to or affect change in language,[8] this issue, together with the evaluation problem, sets the study of language change squarely within the social arena.

The "evaluation" problem asks how members of a speech community evaluate a given change, and what the effect of this evaluation is on the change. Here the focus is preeminently sociolinguistic in nature, for any innovation in a speaker's linguistic usage that is salient and perceptible—whether it is a new turn of phrase or new lexical item, a new pronunciation, a new syntactic construction, a new meaning for an already-existing word—can evoke an evaluative response from the hearer: is this innovation one that I as a speaker like, one that I might now choose to adopt in my own speech, or is it one I would want to avoid? Language use in this view says something about each of us as individuals and as members of a group, and this social dimension to language use turns out to be crucial to understanding language change and especially the spread of innovations.

Finally, there is the "actuation" problem of why a given linguistic change occurred at the particular time and place it did. This problem seeks to find the conditions that lead to a given change, and adds a further dimension to the understanding of language change, for if we understand the causes of change well enough and can pinpoint certain conditions present in a speech community and/or a linguistic system, we ought then to be able to "predict" (in a retrospective way, so that perhaps "post-dict" or "retro-dict" would be more appropriate) the direction of change. "Predict" here does not have its usual sense of hypothesizing about what

[8]Fodor 1965 has some very interesting, but ultimately inconclusive, discussion on this issue.

might happen in the future, and indeed, scholars of language change, perhaps unnecessarily, generally avoid making even educated guesses about future language states; rather, "predict" here means giving an explanation for why a given element in a language — a sound, a form, a construction, etc. — changed the way it did, rather than in some other possible way. For example, why did Old English ē become in later English *iy* rather than *e* or *a* or some other vowel?[9]

Several of these foundational questions are interconnected, as the discussion above makes clear, and lend themselves to the statement of other related issues, such as the relation between synchrony and diachrony mentioned in connection with the "constraints" problem. Moreover, other issues not overtly stated by Weinreich, Herzog, and Labov can be mentioned. Particularly vexing is the determination of "naturalness" in the direction of language change: can change ever lead to an unnatural state? Are some changes more likely to occur than others? Classification of changes and observation of the range of possible changes are clearly of relevance here, but so too are an understanding of the physiological bases for sound change, the psychological bases for morphological change, and the like.

In the sections that follow, we explore these various facets of historical linguistics as the study of both language change and language history; moreover, in so doing, we bring to light some of the methods used by historical linguists in their investigations.

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[9]Note that ē —> e and ē —> a are changes that are attested in other languages (e.g. the former in Pontic Greek, the latter in Bulgarian (with a palatal on-glide), and are thus possible outcomes of change that one has to reckon with (though it is not clear if these are direct changes or the result of the accumulation of several changes). For a discussion of why vowels move along the paths they do, see Labov 1994, especially the Appendix.

3. **Substance of Change**: **What Types Occur? How do They Spread?**

It is stated above, almost as an axiom, that virtually all aspects of a language are subject to change, except for those that correspond to absolute linguistic universals that truly cannot be violated. Thus, the simple answer to what can change in a language is "(virtually) everything", though it is not the case that everything in a language at a given point must change — there can be diachronic stability as well as diachronic change. For example, except for the realization of the main accent, from high pitch to greater loudness, the Greek word *ánemos* 'wind' has remained virtually unchanged for at least 2500 years: in its segmental phonological composition, its morphological form, its syntactic behavior, and its meaning.

This simple answer about what can change makes it difficult to exemplify all types of change in a brief discussion, but an examination of any earlier stage of any language, and a comparison with a later stage, will reveal a certain number of changes. Examples are provided here from just two languages, but a similar exercise involving other languages would yield similar results.

Example (1a) from English of 660 AD, as compared with modern English, reveals changes in phonology, e.g. *nū* —> *now*, *wē* —> *we*; morphology, e.g. absence of plural marking on the verb *sculon*, which ultimately yielded *should*; and lexicon, e.g. the loss of the word *herian*, the addition of the word *praise*, which entered the language some six centuries later. The changes in the once-free word *ric-* 'realm' straddle the boundary between morphology and the lexicon — it is now restricted to occurrence as a bound element, though possibly still recognizably segmentable as a

morpheme, in *bishopric* 'the diocese or office of a bishop' (segmentable due to the independent existence of *bishop*) but has no a clearly recognizable morphemic status in *eldritch* 'strange or unearthly'. Moreover, Chaucer's subordinate clause with *whan that* as opposed to standard Modern English *when* by itself gives an example of a change in sentence structure (syntax).

Similarly, between Ancient Greek and Modern Greek, with regard to phonology and morphology, one finds changes in the realization of sounds, so that [ü, ü:, ē, oi, i, ī] all merged eventually to [i], aspirated voiceless stops [p^h t^h k^h] became voiceless fricatives [f θ x], etc.; and in the form of grammatical endings, e.g. second person past tense imperfective aspect nonactive voice *-so* became *-sun*, matching the first person ending *-mun* in vocalism and final segment. Changes are also evident in the extent of word-formation processes, e.g. coordinative compounds of the type *maxero-píruna* 'knife and fork; cutlery' were rare in Ancient Greek but have become more numerous in Modern Greek and the type has been extended to verbs, as in *aniɣo-klíno* 'I open and close'. Further, Greek syntax has shifted drastically, as the infinitive of Ancient Greek has given way to finite-clause replacements, and constructions which once tolerated missing (understood) objects have yielded to ones with overt expression of the object, both illustrated in (2), among other changes:[10]

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[10]For instance, the use of the marker *tou* (originally a genitive case form of the definite article used as a nominalizer of verbs) as a generalized complementizer introducing the subordinated infinitive disappears from later Greek (compare the reduction in English from the double complementizer of Chaucerian *whan that* to the later single complementizer discussed above). Similarly, the status of the marker *na* has changed; it was most likely a full-fledged complementizer when it was first used as a generalized subordinator in Medieval Greek (it derives from the Ancient Greek final

(2) a. ēn ho trugētos hetoimos tou therizein (*1Samuel* 13.21 [2nd c. BC])
was/3SG the-harvest ready COMP harvest/INF
'The harvest was ready for harvesting'
(NB: the object of the infinitive *therizein* is not overtly expressed)

b. ekhei hetoimon ton daon na ton eparei (*Lybistros* 2663 [14th c. AD])
has/3SG ready the-torch COMP it/ACC take/3SG
'She has the torch ready for him to take'
(NB: literally, this is "...ready that he take it", with a finite complement; the object of *eparei* is overtly expressed (*ton*))

Moreover, in keeping with the program suggested above whereby one can learn about language change from synchronic variation, an example from contemporary American English can be cited. In Central Ohio, among younger speakers in the 1960s, the verb *bean* was used in baseball parlance to refer to being hit by a pitched ball on one's head, whereas for younger speakers 30 years later in the 1990s, it refers to being hit with a pitch anywhere on the body, thus with a broader meaning. The synchronic variation in the 1990s between younger speakers with the innovative broad meaning and (now) older speakers with the narrower meaning suggests a change that may ultimately spread across all age groups in the speech community as the now younger speakers age.

From the point of view of the "evaluation" question discussed above, when these innovations, or any innovation, first entered the language, they must have provoked a certain reaction from those who heard them, perhaps even a negative one. Most

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conjunction *hína* 'so that') but in Modern Greek it is arguably merely a grammatical marker of the subjunctive mood (see Philippaki-Warburton 1994).

readers will have had the experience of hearing some technology-oriented neologism for the first time, e.g. *access* as a verb (e.g. *You can access that information electronically*), *e-mail* as a count noun (e.g. *I received thirty e-mails this morning*), or *e-* as a prefix referring to electronic transmission (as in *e-mail, e-trade, e-commerce, e-talk*, etc.), of needing to decide whether to adopt such usages, and of finding that even if one winced on first hearing them, repeated use by others made it easy finally just to go along and join in the innovative usage.

In a similar way, though surely with more complicated motivation on the part of adopting speakers, all innovations that ultimately are generalized over the (relevant) speech community must be positively evaluated by speakers and actively (though not necessarily consciously) adopted by them. Such innovations, once they have spread, can be called "real" changes, in that the behavior of the speech community at large has been affected. Significantly, as a corollary, it must be noted that not all innovations take hold and spread so as to become changes in a whole speech community; restricted spread of an innovation can lead to the formation of dialects within a larger speech community. Moreover, not all synchronic variation will result in a change in the long term, for there can be situations in which stable variation persists over long periods of time; for instance, the variable deletion of the past-tense marker *-t/-(e)d* (e.g. *kep'* for *kept*) in American English has been stable for several generations (Labov 1989). The dynamics of the spread of innovations and the resolution of competition between innovative and older variants largely constitute a sociological matter, but clearly, one with linguistic consequences (see also the end of section 4).

It is suggested above that at the simplest level, the mere repetition and recurrence of some innovative usages can inure a speaker to their novel nature and thus promote acceptance and eventual adoption and spread. Another dimension to the matter of

recurrence of innovations is the fact that some changes are found to occur again and again, independently, in language after language, thus giving a basis for deeming such a change to be a natural one. Some examples of such recurring types of changes include the following:

(3) a. the change of [f] to [h] occurred in the ancient Italic language of Faliscan, in Spanish, and in some varieties of Chinese (and no doubt elsewhere)

b. devoicing of word-final voiced stops occurred in Russian, Turkish, and German (e.g. earlier *rad* 'wheel' has come to be pronounced [rat])

c. reductions of clusters with concomitant lengthening of an adjacent vowel ("compensatory lengthening"), as in Late Latin *asnu* 'ass' —> French *âne* (pronounced [ɑ̃n]), or Old English *thegn* —> Modern English *thane*

d. loss of unaccented vowels, especially word-medially (syncope), as in Middle English trisyllabic *chimenee* (accent on the initial syllable) becoming Modern English disyllabic *chimney*, with similar changes in Latin and Old Irish

e. adjacent sounds coming to agree in certain features (assimilation), as in Old English *hænep* yielding (ultimately) Modern English *hemp*, with the nasal and stop consonants, adjacent after syncope of the unaccented *-e-*, agreeing in point of articulation (both labial, as opposed to dental versus labial earlier); similar changes occur in Greek, Latin, Sanskrit, Arabic, and virtually every other language known

f. reanalysis of third person verb forms with a person-marking suffix as having no suffix (thus as base forms) occurred in Greek, Persian, and Sanskrit[11]

g. in many languages, analogically innovated forms have taken over the primary function for a sign while the forms they replace, if they survive at all, take on a

[11]This is the phenomenon known as Watkins' Law (Watkins 1962), discussed with additional references in Collinge (1985:239-240).

restricted function, as with English *brothers* ousting the older but now functionally quite limited *brethren*, among other cases[12]

h. in many languages, words that were once free and independent have come to take on the status of bound affixes, as in Latin *mente*, the ablative case of 'mind' coming to be the French adverbial suffix *-ment*, as in *clairement* 'clearly' (and thus etymologically, "with a clear mind")[13]

i. the broadening of referent seen in the above example of Central Ohio *bean* recurs in the development of Middle English *dogge* 'hunting dog —> Modern English *dog*, referring to canines in general

Identifying such changes as "natural", and thus unsurprising when they occur is in keeping with Labov's "constraints" problem and the "actuation" problem, as discussed above.

Searching for parallels and deriving inferences about naturalness of developments is thus an important part of historical linguistics, but one has to be cautious about not going too far, in that "natural" need not mean "necessary" or "only in one direction". Thus many languages, including English, persist in having word-final voiced stops quite happily, and some have even undergone word-final voicing, as the

[12]This is the observation embodied in Kurylowicz's fourth "law" of analogy (Kurylowicz 1947); see Hock (1991:210-237) and Winters 1995 for discussion.

[13]This phenomenon is referred to in the literature as "grammaticalization" (sometimes also "grammaticization" or even "grammatization"); see Hopper & Traugott 1993 and Heine 2000 for an introduction to the study of such phenomena, as well as Campbell 1999b, Janda 1999, Joseph 1999, Newmeyer 1998, and Norde 1999 for some critical reappraisals of some of the claims of so-called "grammaticalization theory".

evidence of the third person singular past ending *-d* in Old Latin, from Proto-Indo-European *-t shows, and cases of movement from bound affix to independent word (the reverse of the *mente* example) are known.[14] Moreover, in some domains, for instance, semantic change, the directions of changes are so tied to the real-world socio-cultural context that being able to label recurring results of changes, as with the cases of broadening mentioned above, does little to actually advance our understanding of why a change occurred. For instance, English *bead* changed in meaning from 'prayer' to 'small round glass object'; such an innovation in the referent associated with a particular form can make sense only in the context of the counting of prayers on rosaries, and so is one that no theory of semantic change could predict as "natural".

4. Mechanisms of Change — How Is Change Manifested in Language?

One way that language change is manifested, clearly, is through changes in the behavior of speakers, in that a word comes to be pronounced in a different way, used in a novel construction, extended in meaning, and so on. In such ways, language change is manifested as alterations in the actual form that language takes in the mouths (or hands)[15] of its users, what might in the terminology of recent decades be termed changes in the surface structure, i.e. in the output of the grammar.

[14]See Janda 1999 for a summary of the rather considerable number of such cases that have been documented.

[15]I say this to remind the reader that language is not exclusively a matter of the vocal channel, since manually-based sign(ed) languages are full-fledged languages in all respects known to us. From a diachronic perspective, sign(ed) languages show many of the same types of change as vocally-based languages do, and their users respond to

However, for the most part, explicit synchronic accounts of a linguistic phenomenon are necessarily couched in a particular theoretical framework and the formalism associated with that framework. This enterprise is driven by the assumption made by (most) linguists that there is some correct linguistic theory that is operative — we may not yet have found the very best theory, but the exercise of positing analyses and testing them is part of the process that will lead ultimately to the discovery of that best theory. Moreover, given that, as the diagram in section 2 above indicates, diachrony is the progression through successive synchronic states, and further that the current conception of the "best" linguistic theory is the medium for describing and analyzing the grammars of each of those synchronic language states, it is natural to think that language change can be accounted for or at least best characterized in terms of change in these grammars.

Indeed, in the past 40 years or so, there have been several attempts at devising an account of language change in just those terms: Halle 1962, for instance, equated sound change with the addition of a phonological rule to the end of a grammar; Kiparsky 1968 utilized changes in the form of phonological rules as well as in their order relative to one another as a means of accounting for phonological change; and Klima 1964, 1965 took a similar approach to syntactic change.[16] More recently, with a change in the dominant theoretical paradigm, in phonology in the United States at least, to Optimality Theory, a constraint-based approach to grammar, the view has been

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the same types of social factors that affect change in all languages. See Frishberg 1975, 1976, and Hock & Joseph (1996:129, 131, 170, 269) for some examples and discussion.

[16]See King 1969 for a summary of these views in a (then-)definitive statement, and Jasanoff 1971 for a highly critical assessment of them.

advanced that phonological change is the result of changes in the strengths of constraints relative to one another.[17]

This view treats (surface) language change as a function of changes in grammars, and thus a secondary side-effect, a derivative, of changes motivated by abstract properties of grammars; still, it is an attractive view, one that is easy to believe in. However, there is good reason to reject it as the right way to view the process and mechanisms of language change; at best, it would seem to provide a convenient description of the difference between two stages of a language. For one thing, as Andersen 1973 has observed, saying that sound change is the addition of a phonological rule to the grammar does not answer the question of where the rule comes from in the first place; he looks instead to the reinterpretation of ambiguous acoustic signals as a possible source of sound change (see also §V) and sees rule addition as a construct that describes the diachronic correspondence between the grammar before the reinterpretation and the grammar afterward but does not give any insight into the process(es) that gave rise to the change.

Also, changes in phonological rule systems of the sort that motivated the treatment in Kiparsky 1968 were generally associated with changes in paradigms. For example, an early Latin rule of w —> Ø that accounted for the relationship in the root between *par-os* 'little/NOM.SG.MASC' and *parw-˽* 'little/GEN.SG.MASC' is absent from later Latin, and tht absence correlated with the appearance of a uniform paradigm in Classical Latin *parw-os*/*parw-˽* (spelled *paruus*/*parui*). However, that correlation is a complete accident if the motivation for change resides in abstract properties of a

[17]See for instance, Nagy & Reynolds 1997.

grammar, such as the number of rules a system has,[18] for the loss of a rule would not necessarily lead to a uniform paradigm. On the other hand, as Kiparsky 1971 recognized, one could instead place a positive value on aspects of the output of rules,[19] such as uniformity within a paradigm, and posit that the motivating force for changes in grammars resides in the nature of the output they generate. In that case, the loss of the Latin *w*-deletion rule would be a highly valued event, since the output of the resulting grammar without this rule has a uniform paradigm with *w* in all forms. If that is the case, though, one has to wonder why it is necessary to talk in terms of changes in rules and grammars at all! One could instead view the change in surface forms (e.g. *paros* —> *parwos*) as the primary change (on the motivation for which, see section 5) and then view changes in the form of grammars as at best a description of the comparison of the grammar before the change with the grammar afterwards.

Looking at change as something that is manifested in and motivated by a rule system makes it hard to account for changes that have a restricted distribution, for the very notion of "rule" implies some generality over large sets of forms. For instance, as Hock (1991:256) notes, at least some changes in form motivated by a (psychologically based or analogical) association do not lend themselves well to treatment in terms of rule change, since there are no rules at all involved in the change. He cites the example of so-called "contamination", as seen in the change of French *femelle* to *female* as it was borrowed into English, based on a perceived connection with the semantically close word *male*.[20] Similarly, the early Modern Greek weak

[18]Note that the view that grammar change is motivated by simplicity alone could use the number of rules as a metric for evaluating the simplicity of a grammar.

[19]Compare also current versions of Optimality Theory where the constraints that are ranked are output-oriented.

[20]Thus *male* "contaminated" *femelle* and a blended form *female* resulted.

third person subject pronoun, e.g. masculine singular *tos*, seems to have originated in a construction with the demonstrative *ná* 'here is/are' and spread from there, but only to use with the locative question word *pún* 'where is/are?'; thus while the use of this innovative form has expanded beyond its original locus, it has not done so to any great exent, so that speaking in terms of the extension of a rule here is not particularly insightful.[21]

As another case of a change that starts in a restricted linguistic environment and then spreads on a limited basis, consider the change by which a *-g-* has come to occur in the first person singular present indicative of certain verbs in Spanish, e.g. *salgo* 'I depart'. This *-g-* appears to have originated in a few verbs where it was the result of regular sound changes, and then to have spread to other verbs on a limited basis. Moreover, with verbs that acquired this *-g-*, it spread within the verbal paradigm in a very limited way, into all forms of the present subjunctive (e.g. *salgas* 'you might depart') but nowhere else, not even other forms of the indicative.[22] It is difficult to see how a rule-based account would be explanatory here, since there is no obvious basis for deriving the subjunctive stem from the first person indicative stem; rather the simple occurrence of a stem allomorph somewhere in the overall paradigm seems to have been basis enough for a spread into other, even distantly related, forms. The frequency of cases such as these — and examples could be multiplied — suggests that this might be the most accurate model of how change occurs and manifests itself in the grammar of a language and in the behavior (output) of speakers, with the widely seen apparently general changes simply representing the endpoint of a series of limited extensions of a change from its point of origination.

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[21]See Joseph 1994, 1999 for more details on this development.

[22]See Lloyd (1987:162ff.), and Penny (1991:150ff.) for some discussion. I am indebted to Rich Janda for bringing this example to my attention.

Another dimension to the issue of how change in language is manifested has to do with where change starts in a speech community and where it ends up, as suggested in section 3. Just as a change might start in a restricted part of the grammar, and be generalized from there, as with the Greek and Spanish examples just mentioned, it is also the case that most changes appear to start in a limited subset of the speech community and then spread from there (if they spread at all), largely driven by social factors such as the prestige (overt or covert) of the group originally identified with the innovative pronunciation, form, construction, turn or phrase, or whatever. This model for change was developed by William Labov, based on his observations of centralization of diphthongs in Martha's Vineyard in the early 1960s, and has been amplified upon in numerous studies since then.[23] Such a model for the spread of an innovation raises an important question that is not fully resolved to every linguist's satisfaction: when is a change said to have occurred, at the first point at which an innovation appears in the speech of some individual or only when the innovation has spread somewhat through at least some part of the speech community? Some linguists see the spread as a purely sociological phenomenon and thus concentrate on what permits the emergence of an innovation in the first place (system-internal factors, contact with other speakers, etc. — see section 5) while others say that individual perturbations in usage are insignificant unless others adopt them, so that "real" change is only at the level of the sspeech community, or some subset thereof. It needs to be noted as well that limited spread through a speech community is one basis upon which dialects are created, and if a sufficient number of innovations are shared by some subset of speakers to the exclusion of other parts of the speech community, a separate language can well result.

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[23]See Labov 1994 for an excellent and detailed survey of the results of this research program into the spread of change.

5. Explanation of Change — Why Does It Happen?

The preceding sections have shown that many different kinds of change in language as well as change at all levels are possible. Consequently, it may seem that change is inevitable, and in some sense it is, in that change is no surprise. Nonetheless, linguists tend to treat the lack of change, i.e. linguistic stability from generation to generation, as the unmarked situation, so that change, when it does occur, demands an explanation. It is useful therefore to consider the various factors that induce change, that is, to explore the underlying causation of language change.

There are four main kinds of factors that play a role in inducing language change: psychological factors, physiological factors, systemic factors, and social factors. These all make sense in that they correspond to different aspects of language: language as a psychological "entity" housed (somewhere) in the brains of speakers, language as the production of sounds and signs and forms through the physiology of the human body (e.g. the vocal tract), language as a system with regularities and interacting components, and finally language as a social "organism" that exists in the interactions between and among members of social groups. These various causal factors are briefly introduced in what follows.

Several of the examples discussed above can be explained by reference to psychological factors. Key among these is analogy, which can be described as the influence of one form or class of forms over another and is psychological in that it really reflects a mode of thinking in which a connection, a perception of sameness along some dimension (semantic, formal, phonic, etc.), is made between two linguistic

units; changes caused by such influence are referred to as analogical changes and while a number of classificatory schemata are possible for the variety of attested analogical changes,[24] virtually all of these changes boil down to the same basic motivation, that of echoing the abovementioned perception of sameness by the constructiion of a sameness in form. For instance, in the change of the Greek second person singular past ending, from *-so* to *-sun*, it appears that there was influence of (i.e., a perception of sameness with) the first person singular ending *-mun*, since in this case, there was no general change of *o* to *u* nor a general accretion of a word-final *-n* that could have altered the earlier *-so* to *-sun*. Moreover, the grammatical closeness of the endings in terms of what they mark on a verb makes an appeal to analogical influence particularly attractive here. Further, the change mentioned above of early Latin *paros* 'small' to later *parwos*, the mismatch between a stem form *par-* in the early nominative singular and a stem form *parw-* in the genitive singular suggests that the change to both forms having *parw-* shows a similar motivation; a clear connection between the two — they are members of the same paradigm after all — can be taken as the basis for the influence of one form (here the genitive form) over another (here the nominative form) and the formal reshaping of the latter in accordance with this influence. The psychological link between the forms, here furnished by their grammatical sameness, provides the basis for the change. Even in the case of the generalization of meaning and semantic reinterpretations of the sort seen with *dogge* —> *dog*, psychological factors play a role, since in a sense the changes represent reasonable guesses as to the connection between a word and the context it occurs in; that is, since even two animals of the same species are not point-for-point identical in all respects (trivially, they can differ in size and age), a speaker hearing *dogge* being

[24]See the discussion and presentation of terminology in virtually any standard textbook on historical linguistics, e.g. Hock 1991 or Hock & Joseph 1996, among (many) others.

used to refer to two separate canines, even ones ostensibly similar in some respects, could make the reasonable assumption that the word could be used in the case of *any* canine nonidentity — that is, such an assumption would be an instance of an abductive change, in the sense of Andersen 1973, motivated by a reasoning schema involving a "best guess" as to what the use of a particular word was focusing on. Finally, to the extent that universals of linguistic structure and use can be identified that have some reasonable cognitive basis, some changes can be attributed to such cognitive factors; the change in (2) above in which Greek came to require an object pronoun in a construction that previously did not require it may be a case in point, if a perceptually based universal constraint that favors finite clauses that are whole and intact, as opposed to the "streamlining" possible with reduced clauses such as infinitives, is responsible for the appearance of the object pronoun in the later Greek form of the construction (as suggested tentatively in Joseph 1980, though see Joseph 1990:186-187, 197n.B, 201-202 for some counter-indications).

One way of telling that a psychological cause such as analogy is responsible for a change is that other causal factors can be ruled out. In particular, there is no reason to think that physiological factors, such as the constraints of the speech tract or the perceptual mechanism, a type of explanation pursued very compellingly by Ohala (see, e.g. Ohala 1993, 2000), were at work. Still, in most cases of pure sound change, physiology does play a leading role. The very common loss of unaccented, especially unstressed, vowels (see (3d)), can be attributed to the weak articulation of an unaccentd vowel when the main accent involves heightened intensity (as it does in English), though the weak perceptual salience of such vowels plays a role too. Moreover, assimilation (see (3e)), surely the single most common type of sound change there is, is triggered mostly by the greater economy of articulator movements needed in the

transition from one sound into the next when the sounds agree, e.g. in point of articulation (as in (3e)).

In a sense, both analogy and physiologically induced sound changes involve aspects of the language system as a system. Analogy, for instance, pertains in part to the mental storage of linguistic material or the cognitive side thereof, and has to do as well with the systems of relations among elements that speakers perceive and establish. Physiology, moreover, pertains to those parts of the system involved in the production or perception of speech. Still, there are other system-related factors that play a role in bringing on language change. Some of the shifts in long vowels seen in English, for instance, were not isolated events but rather were tied to other changes in the vowel system; thus, (roughly) not only did mid front ē become ī (as in *wē* to Modern *we*, discussed earlier) but low ā became ē (as in *name*) also. Such "chain shifts" seem to involve whole systems of sounds moving rather than there being a series of completely isolated and unrelated changes. Similarly, the crowding of phonetic space referred to above (section 2) concerning Serbian affricates would be a clear case of systemic pressures playing a role in a change in those dialects that have narrowed the original three-way contrast to a two-way one (see footnote 7). Finally, at the lexical level, one can note the so-called "blocking effect" where the existence of a fixed expression in a language seems to be able to block the creation of synonymous expressions, so that the system of lexical(ized) expressions interacts with the productive mechanisms for spontaneous creation of lexical material; thus the presence of *yesterday* in English apparently blocks the phrase **the day before today*, whereas the absence of a word like **pre-yesterday* conversely seems to play a role in the acceptability of the phrase *the day before yesterday*.

Finally, there are social factors that play a role in causing language change. Some matters in language are directly sensitive to speakers' place in society and their relationship with other speakers, in particular terms of address and epithets; when there are changes in the social fabric, there can be corresponding changes in these linguistic aspects, usually involving lexical change. For instance, during the period around the French Revolution, changes too place in the form of second person address in French, in accordance with a general egalitarian ideology in which the reciprocal use of the ("familiar") second singular pronoun *tu* served as an expression of solidarity.[25] Similarly, changes in attitudes about various sorts of designated groups in American society have led to changes in their appellations, giving, for instance, *differently abled* instead of *handicapped, First (*or *Native) Americans* instead of *Indians*, etc.

There are, however, other, perhaps more important ways in which social factors play a role in change, for they provide the key mechanism for the spread of one of a set of competing forms throughout a speech community, largely through the attachment of prestige to one variant. As noted in section 2, both the "embedding" problem and the "evaluation" problem involve the recognition of language as a quintessentially social phenomenon, and the evaluation problem is especially relevant to the matter of the spread of innovations. The use of language as a marker of social identity and group membership means that various aspects of language use can spread among members of a group, if — for whatever reason — these features are taken to be emblematic of individuals identified as key or typical members of a group. This process can be seen, for instance, in the spread of slang expressions or jargon (i.e., occupationally related vocabulary), where one's "in-group" versus "out-group"

[25]See Brown & Gilman 1960 for a discussion of these and other developments pertaining to second person address in various European languages.

status based on use of or knowledge of particular terms and phrases is often painfully evident, as any older speaker in the midst of a group of teenagers or a nonenthusiast amongst a group of "techno-philes" can readily attest to. Importantly, the same mechanisms that foster the spread of such lexical innovations seem to be at work in more subtle kinds of change involving innovative pronunciations, constructions, and the like. Admittedly, though, it is still an unresolved issue among linguists as to when one can talk about a change — at the point at which an innovation arises, e.g. due to systemic or physiological factors, as outlined above, or at the point at which an innovation has spread, having been adopted by speakers beyond the point of origination.

The recognition of the role of social factors leads to one particular type of social situation involving speakers of a language, namely when they come into contact with speakers of a different language. Such language contact situations are in a sense no different in kind from the contact between speakers of different dialects of the same language, though the degree of difference between the speech forms exhibited by each speaker is typically greater in the case of language contact. Language contact can be the source of innovations, most evidently in lexical matters. For example, new words or phrases can enter a language from models in another language, in the form of direct borrowings such as*praise*, borrowed into Middle English from early French and ultimately replacing earlier English *herian* (cf. (1a) above), and *coup d'état*, more recently borrowed, also from French, but also via so-called "loan translations" in which a foreign phrase is rendered into the borrowing language, as with the phrase *It goes without saying*, based almost literally on French *Ça va sans dire*. Sometimes, however, borrowings can directly or indirectly introduce structural innovations into a language. For example, the existence of plurals in English such as *schemata* or *criteria* or *bases* (from *basis*), all from Greek, has extended the range of plural

formation possibilities, and has led to innovative forms such as *processes*,[26] pronounced with a final syllable [...siyz]), modeled analogically on *bases*; similarly, the active voice *-ing* form in *it goes without saying* is unusual from the English standpoint, where a passive form as in *it goes without being said* would be, strictly speaking, more "English-like".

Under intense conditions of sustained language contact, especially when there is some degree of bi- or multi-lingualism to be found among individuals in a speech community,[27] it is not unusual for languages to converge structurally. This has happened in the Balkans, where Albanian, Bulgarian, Greek, Macedonian, and Romanian, among other languages, have come to be syntactically quite parallel to each other, so much so that the languages have been spoken about as multiple lexicons with but a single grammar.[28] The social context in which contact takes place turns out to

[26]The noun *process* is a borrowing ultimately from Latin, and thus a Greek-like plural would not be expected with it; once it enters English, of course, all bets are off, and the word is no longer bound by its heritage. Attaching the native English plural marker or a Greek-like marker or reanalyzing the word are all within the realm of possibility; note that *criteria* is quite commonly used as a singular by many speakers, and one can even occasionally hear *criterions.*

[27]Recognizing the role of multi-lingualism in language change brings a seemingly "external" cause, namely language contact, into the "internal" — here psychological — domain, since the "contact" is really in the mind of the bilingual speaker.

[28]This quote is based on the observation of the Slovene linguist Kopitar who noted (1829:86) concerning Albanian, Bulgarian, and Romanian that "nur eine Sprachform herrscht, aber mit dreierlei Sprachmaterie" ('only one grammar holds sway, but with three lexicons'. I follow here the translation by Friedman 1999:3, who has very interesting comments to make about the Balkan speech community.

have a significant effect on the outcome of the linguistic contact, to the extent that the current thinking is that there are no linguistic constraints whatsoever on what may be transferred from one language into another in a contact situation — one finds all types of words and morphemes borrowed, sentence patterns passing between languages, meanings of words being affected, new sounds entering a language, and so on, all through contact.[29]

The effects of contact are so pervasive, especially when one considers that the spread of innovations within a language necessarily involves contact among speakers, in such a case though of the same language, as noted above, that it could be hypothesized that *all* change in language involves contact. Despite the potential for such a claim, the non-contact causes of change, outlined above, cannot be discounted, and it seems that the causes of language change are best understood by reference to both internal and external factors.

6. Some Dramatic Discoveries and Important Methods

This survey of historical linguistics would be incomplete without mention of two dramatic discoveries among the many that have emerged from this subfield: language relatedness and regularity of sound change. These discoveries also have the benefit of allowing for a consideration of certain key methods that historical linguists have utilized over the years.

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[29]See Thomason & Kaufman (1988:Chapter 2) and Thomason 2000 for discussion of this point.

With regard to the former, we observe that scholars have long been intrigued by the mix of diversity and similarity that human languages show. Among the hypotheses that have been advanced to explain this mix, among the most promising is one that claims that at least some of the known languages show certain similarities because they represent later instantiations of a once-single speech community; that is, it has been hypothesized that a single speech community, through the accumulation of changes of the sort described in previous sections and perhaps aided by migrations, resettlement, and physical splits in the community, can over time divide and spawn numerous separate and ultimately distinct speech communities. In such a situation, the resulting distinct speech communities show some similarity by virtue of deriving from the same starting point, and more important, show various systematic correspondences of form for this same reason. These resulting languages are said to be *related* (actually, *genetically related*, where "genetic" has its etymological sense of 'pertaining to origin' not the more modern, biological, sense), and the original speech community is referred to as a *proto-language* (or *parent language*) for its several offspring languages.

The recognition that languages could be viewed as related to one another, led, by extension, to the observation that some languages were more closely related to each other than to other languages. Such clusters of more closely related languages are said to form *sub-groups* within a larger language family. With that recognition, therefore, grouping and subgrouping of languages became an important scholarly activity, and with the discovery of new languages, the question of how they fit into the emerging set of known language families was always asked.

Critical to the establishment of relatedness is the issue of methodology. Of paramount importance here is the Comparative Method, by which corresponding

features (more usually sounds in corresponding words but also morphemes and even syntactic structures) are compared with an eye to determining a set of systematic relationships that hold among the languages being compared. Languages are generally held to be related when a sufficiently large set of such correspondences can be found, though there are controversies over just how large such a set needs to be to warrant a claim of relatedness, and whether the correspondences could instead be a matter of chance or perhaps due to contact between the languages in question. When such systematic correspondences can be found, then one can also draw inferences about the source from which the related languages arose, on the assumption that the comparable elements each derived through their own lineal descent from a common starting point. When the Comparative Method "works", therefore, it is possible to make hypotheses about the earlier states from which the related languages developed and thus to reconstruct (aspects of) ancestor languages that gave rise to the set of related languages in question. For example, the recurring correspondence set described below involving *p* in Greek, Latin, and Sanskrit matching *f* in Germanic (under certain conditions), has led most Indo-Europeanists to a reconstruction of *p* for the sound in the source language ("Proto-Indo-European") that gave rise to the corresponding elements in the offspring languages.

A side-benefit for the study of language change is the fact that the assumption of relatedness and the Comparative Method also provide another source of information about change. If an element A in one language can be systematically compared to a non-identical element B in another (putatively related) language, and the hypothesis is made that they derive from a reconstructed element C (usually affixed with a * to indicate that the reconstruction is a hypothesis not an attested form), then clearly at least one change has occurred — either A has changed and B reflects the

reconstructed element faithfully, or B has changed and A has not, or both A and B have changed, in different directions). Thus if we reconstruct Proto-Indo-European *p for the set of Sanskrit (etc.) *p* = Germanic *f*, we are committing ourselves to the hypothesis that Germanic is innovative in this case; had we reconstructed something like an affricate *pf, then there would have been change in all the languages being compared.

As a result of all the research into language relatedness and grouping of languages into families, there are now numerous well-researched and well-established language groups. Among these, to name just a few, are *Indo-European* (covering many of the languages from India west into Europe, including English, French, Greek, Russian, among numerous others), *Finno-Ugric* (covering Hungarian and many languages in the Baltic area, including Estonian and Finnish), *Sino-Tibetan*, (including Tibetan, Burmese, and the numerous Chinese languages, Mandarin, Cantonese, etc.), *Semitic* (taking in languages of the Middle East, including Hebrew, Arabic, and ancient Akkadian), *Bantu* (covering numerous languages of Eastern and Southern Africa, such as Swahili, Setswana, and Zulu), *Algonquian* (including many native North American languages from the eastern seaboard across the Great Lakes area into the prairie provinces of Canada, such as Cree, Fox, Ojibwa, Micmac, Massachusett, Delaware, etc.), *Uto-Aztecan* (covering a huge number of languages of the western United States and Mexico, including Comanche, Southern Paiute, Hopi, Nahuatl, and others), *Athabaskan* (covering languages extending from Alaska into Mexico, including Chipewyan, Navajo, and Apache), and *Austronesian* (covering much of the South Pacific, including Tahitian, Samoan, Maori, Hawaiian, and Tagalog, but extending also into Madagascar where Malagasy is spoken). There are also several languages that have defied classification and so are called *language isolates*, e.g. Basque, spoken now in southern France and northern Spain; Burushaski, still spoken

in the northern part of South Asia; and Sumerian, spoken in ancient times in Mesopotamia. Such languages have no known or demonstrable relatives, though it is conceivable, even likely, that they have relatives that are no longer spoken, i.e. that died out without a trace, or relatives that current methods simply are not able to link to the isolates with any degree of certainty (and see below).

Some of these groups are widely recognized to be themselves part of still larger, more all-compassing groupings. For instance, Finno-Ugric is considered to be part of the Uralic family (covering various languages in Siberia, e.g. the Samoyed languages east of the Ural mountains), Semitic is held to be part of Afro-Asiatic (covering (Ancient) Egyptian, Berber, Hausa, and others), Bantu is seen to be part of Niger-Congo (covering West African languages such as Yoruba, Igbo, Twi, and others), Algonquian is taken to be related to two now extinct languages in California (Wiyot and Yurok) and thus to be part of a larger, so-called Algonquian-Ritwan or Algic, family, and so on.

These well-recognized larger groupings raise interesting questions, and on-going controversies, regarding the extent to which all languages can be shown to fall into ever-larger groupings. Is Indo-European related to Uralic, as many believe, and to Semitic? Do these families cohere as part of an even larger so-called Nostratic family, covering as well other families such as Kartvelian (in the Caucasus), Altaic (in Central and Eastern Asia), etc.? Does Austronesian form a larger grouping with Sino-Tibetan? Do the numerous language families in North and South America show any further groupings, perhaps into as few as two or three mega-families? More generally,

how far can such "lumping" of languages go? In particular, can a single proto-language be posited for all known languages?[30]

Armed with these hypotheses about relatedness, linguists in the 19th century, especially Western European scholars investigating the Indo-European languages, were struck by the discovery of numerous systematic correspondences of sounds in various languages in Europe and Asia believed to be part of the IE family, and eventually also by their ability to formulate these correspondences in a precise way, so that apparent exceptions to the correspondences turned out to be systematic in their own right. For instance, the Danish scholar Rasmus Rask (1818) and the German polymath Jacob Grimm (1819) described various correspondences that held between stop consonants in Sanskrit, Greek, Latin, and Germanic, e.g. as noted above, Skt. *p* = Grk. *p* = Lat. *p* = Gmc. *f*, but also *d* = *d* = *d* = *t*, with both correspondences seen in *pad-* = *pod-* (ποδ-) = *ped-* = *foot.* Moreover, many instances of these sets, and others like them involving other points of articulation, were brought to light. Exceptions to these sets were found too, though, yet they were soon explained; for instance, Skt. *p* =

[30]To some extent, therefore, such questions can lead into speculation about the ultimate origin of language (see Carstairs-McCarthy (this volume)) — if human language originated in a single place, then a "proto-world" might be conceivable, though most likely not reconstructible, but if language arose independently in various places around the world, then a "proto-world" could not be a coherent notion. Overlooked in much of the debate and speculation about a "proto-world" (though see the brief comments in Hock & Joseph 1996:488, 496 and Salmons & Joseph 1998:3n.7) is the fact that numerous fully natural and complex sign(ed) languages have arisen spontaneously around the world in various communities with significant numbers of deaf people, so that at best, it would seem that "proto-world" is "proto-oral-world" and not a proto-language for *all* natural human languages.

Gmc. *p* in Skt. *spas*̇- = Old High German *spehon* 'see' or Lat. *p* = Gmc. *p* in *spuo* = *spit*, were shown by Carl Lottner (1862) to occur only after *s*, and cases such as Skt. *p* = Grk. *p* = Lat. *p* = Gmc. *v*, as in *saptá* = *heptá* (ἑπτά) = *septem* = *seven*, where Germanic showed a voiced fricative, were shown by Karl Verner (1877) to be conditioned by the original position of the word accent, since the p/p/p/f set occurs before the accent while p/p/p/v set occurs after the accent, taking the Sanskrit and Greek accent to be indicative of its original placement.

Successes such as these, and others, meant that all of the exceptions to Grimm's observations could be accounted for in a systematic way. The result was that the sound correspondences could be said to be *regular*, in that they held for sounds meeting particular linguistic conditions, e.g. the nature of adjacent sounds, the position relative to accent, etc., conditions which really defined subregularities in their own right. The empirical claim that emerged from such observations was that sound change was regular, subject only to precisely formulable phonetic conditioning. The exceptionlessness of sound change became an important rallying point for historical linguists in the 19th century, and this hypothesis, often referred to now as the Neogrammarian view of sound change, after the scholars based mostly in Leipzig who advanced this notion most vigorously, put the field of linguistics on a scientific footing. Holding only phonetic factors responsible for sound change meant that sound change could be seen as triggered essentially only by physiological factors, of the sort discussed in section 5. The Neogrammarian assumptions about sound change have generally withstood the test of time and the challanges of careful examination of case after case of sound change from language after language and continue to have importance in linguistics today; for instance, it is not unreasonable to see the insistence in generative grammar (see the chapters by Peter Sells and John Goldsmith) on rule-

governed aspects of language as an outgrowth of the Neogrammarian discovery of the regularity of sound change.

7. For the Future — What Remains to be Done?

It should be clear that much has been accomplished towards understanding what happens to languages through time, the basic subject matter of historical linguistics. But even with these impressive accomplishments, much still remains to be done.

First, for all that is known about the histories of numerous individual languages, there are still many languages whose history has not been investigated carefully. In some instances, such investigation is a matter of mining the available material, e.g. regarding Medieval Greek, or Albanian after the 16th century, while for others it involves working out or exploring further relatedness relations with other languages and using the comparative method and/or other methods to make inferences about the earlier stages of the language in question.

Even for well-researched languages, more cataloguing of changes, as well as the determination of a myriad of details of developments, is needed; many texts remain under-examined from all stages of even a language such as English and the same holds for Greek, French, Russian, Hindi, and so on and so forth. Here, what is needed also is information about the social setting for all these languages at all relevant stages, in keeping with the "embedding" problem referred to in Section 2.

Besides filling the gaps in language history, such further research will help towards the development of a clear characterization of naturalness, and thus feed into

the development of a general theory of language change, another desideratum that at present eludes us, as the discussion in Section 2 of the "constraints" problem indicates.

With regard to relatedness among languages, it is fair to ponder whether have we hit a ceiling beyond which there is no further progress. The questions posed at end of the discussion in the previous section are thus directions for future research but are perhaps ultimately unanswerable. It is worth observing here that, as inherently interesting as these questions are, even if they could be answered, even if a "proto-world" could be confidently posited, there would still be the question of how the diversity evident in the languages of the world arose. That is, remaining issues of relatedness are only part of what remains to be done in historical linguistics.

Moreover, what may be thought of as the ultimate historical linguistic question of the origin of language still awaits a definitive answer, and may never be resolved. See footnote 30 but especially the chapter on by Andrew Carstairs-McCarthy for some discussion.

Finally, putting together all the research on language change and historical linguistics leads one to wonder whether a general theory of change is possible. Here it must be recognized that such a theory would involve working out the parameters of change, essentially anwering the five key questions in section 2, but paying attention as well as to diachronic stability, for it is not the case that everything in a language necessarily will undergo a change.[31]

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[31]See Nichols 2000 for a discussion of some aspects of language that show stability through time.

8. Conclusion

Of necessity, this survey has not been able to provide detail on all matters that make up the subfield of historical linguistics, but one final important point is that in order to do historical linguistics properly, one needs above all else to be able to handle all sorts of subfields of linguistics properly. A full understanding of the synchronic system of a language at (at least) two different stages is essential to understanding what has changed and what has not; sociolinguistics must be invoked in order to fully understand the context in which changes occur and especially spread; phonetics is relevant to understanding sound change; and so on. Thus while not in the center of the field of linguistics,[32] historical linguistics nonetheless draws on virtually all aspects of the field in ways that other subfields do not.

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[32]One might qualify this statement with the modifier "anymore", for in the 19th century, diachronic linguistics *was* linguistics, period.

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