

Chapter 3 **Reconstructing linguistic history in a dialect continuum: theory and method**

3.1. Introduction

The goal of this chapter is to articulate a reliable method for reconstructing linguistic history in a dialect continuum. Desiderata for such a method are outlined in 3.1.1, followed by an introduction in section 3.1.2 to those characteristics of a dialect continuum which complicate historical reconstruction. Section 3.2 presents a sociohistorical theory of language change, which guides both the criticism of the traditional Comparative Method in section 3.3 and the development of a revised methodology in section 3.4. The more innovative aspects of the methodology revolve around reconstructing the sociohistorical conditioning of language change, which is guided by the sociohistorical linguistic typology outlined in section 3.5. This methodological and theoretical framework is then put to the test in the reconstruction of KRNB linguistic history in Chapters 4-7.

3.1.1. Desiderata for a method of historical reconstruction

The desiderata outlined here are a summary of some of the principles which modern linguists bring to the task of historical reconstruction. The framework presented in the rest of this chapter is then an argument regarding how these desiderata might be satisfied for reconstruction of linguistic history in a dialect continuum.

Our methods of historical reconstruction should, in the maximum number of contexts, have the capacity to:

1. reconstruct change events in linguistic history; that is, linguistic innovations.
2. reconstruct the historical sequencing of these change events.
3. reconstruct continuous transmission in linguistic history; that is, linguistic inheritance.

4. reconstruct the time-depth for continuous transmission of a linguistic feature. This time-depth may be in terms of either ‘absolute’ time, or, more commonly, ‘relative’ to the time-depth of other features.
5. reconstruct the historical relations between contemporary lects. Such relations are based on continuously transmitted material that testifies to a common change event.
6. consequently reconstruct the linguistic material (words, morphemes, phonemes) present at every stage in linguistic history.

These desiderata spell out an ideal which reconstruction methodology should strive for. However, the central method of historical linguistic methodology—the Comparative Method—when used alone, is not equal to the task of fulfilling these desiderata in the case of dialect continua (see section 3.3). The next section explores briefly the sociolinguistic characteristics of a dialect continuum which cause problems in historical reconstruction.

3.1.2. The dialect continuum

New Indo-Aryan is commonly characterised as a dialect continuum. Masica writes:

Lacking clearcut geographical units of the European type where dialectal variants can crystallize in semi-isolation, or longstanding political boundaries, the entire Indo-Aryan realm (except for Sinhalese) constitutes one enormous dialect continuum, where continued contact inhibits such crystallisation, and differentiated dialects continue to influence one another. The speech of each village differs slightly from the next, without loss of mutual intelligibility, all the way from Assam to Afghanistan.
(Masica 1991: 25; cf. also Shapiro & Schiffman 1981)

The dialect continuum is a sociohistorical and sociolinguistic configuration of speakers and their lects which is characterised by non-discrete boundaries between communities of speakers. Lects in a dialect continuum are, by definition, closely related. Their histories are characterised by recurrent interaction and weak or non-persistent barriers to communication between speakers of adjacent lects. There is a correlation between linguistic divergence and geographical distance (or, in the case of social dialect continua, social “distance”). Concurrent with *localising* tendencies

towards greater divergence, there are *integrating* social forces which encourage linguistic unification through dialect levelling. Saussure (1966: 281) termed these two forces “*l’esprit de clocher*” (“spirit of the (town) church-spire”) and “*la force d’intercourse*” (“force of communication”).¹ To use a different metaphor, both centrifugal (“centre-fleeing”) and centripetal (“centre-seeking”) forces act concurrently in a dialect continuum. The forces involved are social in nature and pull the speaker’s linguistic conventions in two different directions at one and the same time. The centripetal forces pull the speaker’s conventions in the direction of more inclusive and “global” social norms. These forces support the propagation of innovations across a wider range, and support the maintenance of features shared with a wider community of speakers. The centrifugal forces move in the opposite direction, towards more localised and exclusive usage. These forces support the maintenance of conservative features (even in the face of wider pressures to replace them) as well as the propagation of new features with a more local range.

Given this depiction of the dialect continuum, the possibility of common changes occurring subsequent to a period of divergence emerges as a completely natural and normal possibility. This applies equally to the histories of standardised “languages” in a dialect continuum as well as the histories of minor lects. A methodology which is equal to the challenge of dialect continua must reconstruct all possible configurations of change events and not be forced to treat normal phenomena as irregular or irrelevant.

3.2. A non-essentialist, sociohistorical theory of language change

3.2.1. Overview

The framework of historical reconstruction outlined in this chapter depends on, and flows out of, a sociohistorical theory of language change (following Weinrich, Labov & Herzog 1968, Milroy 1992, Croft 2000, Enfield 2003).² Within this framework,

¹ “Dans toute masse humaine deux forces agissent sans cesse simultanément et en sens contraires: d’une part l’esprit particulariste, l’“esprit de clocher”; de l’autre, la force d’“intercourse”, qui crée les communications d’entre les homes” (Saussure 1966: 281).

² In this summary statement key terms are marked in bold, and detailed discussion of their definitions is left to subsequent sections.

linguistic phylogeny is viewed as the differential transmission of linguistic material through speaker interaction over history. Interaction leads to the **propagation** of novel variants through social networks of speaker interaction (Croft 2000: 8, following the work of J. Milroy and L. Milroy). When an innovative feature is propagated through interconnected networks of speaker interaction, this is termed a **Propagation Event (PE)**. The geographical and social extent of a PE is termed its **range**. The theoretical accompaniments for a PE are the **Propagation Network** (the population of interacting speakers who participated in the change), and a **Propagation-Defined language** (the population of utterances used by the members of the Propagation Network, cf. Croft 2000: 26). The propagation-defined language (henceforth PDL) does not necessarily represent a structurally homogenous entity, because it is not defined by its overall linguistic homogeneity but by a *PE*. A phylogenetic **subgroup** of lects share a common PDL (defined by a PE) as part of their linguistic phylogenies. The Network of propagation may have been smaller than for earlier PNs—a phylogenetic division—or larger than for earlier PNs—a phylogenetic reticulation. Both scenarios define a new PDL which figures in the phylogenies of later descendent lects. It seems to me neither necessary nor helpful to distinguish terminologically between PDLs that result from phylogenetic reticulation and those that result from phylogenetic division. Accordingly I take it that *phylogenetic reticulations define a subgroup of lects as much as do phylogenetic divisions*. The theoretical Maxim “once a subgroup, always a subgroup” does not generally hold in a dialect continuum, and a non-essentialist theory of linguistic phylogeny does not insist that it should hold.

A crucial task of the linguistic historian is the **sequencing** of PEs, which enables them to be interpreted within a coherent and plausible account of **linguistic history**. Three criteria for sequencing linguistic changes are put forward in this chapter: **linguistic**, **textual**, and **sociohistorical**. The first concerns necessary or plausible seriation of linguistic changes, such as when one change ‘bleeds’ another. The second criterion for sequencing involves using evidence from historical texts. The third criterion is the most innovative, and involves using disjunctions between PNs as evidence for an intermediary change in the structure of the speech community—a

Speech Community Event (SCE). The reconstruction of SCEs then informs the sequencing of PEs. Sociohistorical sequencing is guided by **sociohistorical linguistic typology**, just as linguistic seriation is guided by **diachronic linguistic typology**.

3.2.2. A sociohistorical theory of linguistic phylogenesis

The theory of phylogenesis is central to the discipline of historical linguistics and its task of reconstructing linguistic history. The overall theory comes of course from biology, where it provides an explanation for continuities and discontinuities between species in terms of historical origins and subsequent evolutionary developments. The notion of ‘a species’ is at the heart and centre of the biological theory of phylogenesis—it shapes how evolutionary history is construed and reconstructed. The parallel notion for a linguistic theory of phylogenesis is the definition of ‘a language’, or ‘a lect’. The definition of this notion has a similar effect on how we construe and reconstruct linguistic history. For the purposes of historical reconstruction, the definition of ‘a language’ must be informed by an understanding of the mechanisms by which ‘a language’ changes. One of the tasks in this section is to articulate a definition of ‘a language’ which (a) conforms with current theories of language change, and (b) is useful for the purposes of historical reconstruction.

The notion of ‘a language’ may be defined differently given different purposes. The descriptivist may define a language for her purposes using synchronic, structural criteria. For the purposes of historical reconstruction a different definition may be required. Croft (2000) compares two kinds of definition that may be taken up by language change theory—the essentialist definition, and the population-based definition. The essentialist definition of a language is constructed in terms of essential structural features. Chatterji attempts such a definition for the ‘Bengali’ dialects when he outlines a short set of features “that may be called pan-Bengali” (1926: 139).

Whatever the descriptive value of this kind of definition, it is theoretically highly problematic when applied to historical reconstruction—a point which Croft explains from biological evolutionary theory:

In the ESSENTIALIST view of a species, each species has immutable essential structural properties that identify it (Mayr 1982). ... The essentialist view ran into problems due to various sorts of structural variation among species, including high degrees of structural variation among individuals in a population and also among different life-stages in an individual in a population ... The essentialist view also ran into problems with populations which could not be distinguished by structural features but were distinct reproductive communities ... But the greatest problem for the essentialist view of a species is that a species evolves, and in so evolving, can lose ‘essential’ structural properties. Identifying this problem is one of the major contributions of Darwin to evolutionary biology. (Croft 2000: 13)

Linguistic analogies to these problems are: (1) the existence of considerable structural differentiation between utterances of the same language—“orderly heterogeneity” (Weinrich *et al.* 1968); (2) changes in the structural features of the lect used by a single speaker over the course of her lifetime; (3) the existence of speech communities that share many features but have ceased to be connected by networks of speaker interaction—for example, the Hindi spoken in India and that spoken in Fiji; and (4) the fact that a language changes and may lose those defining characteristics. These problems are present in Chatterji’s four “pan-Bengali characteristics” mentioned above (for a detailed critique of these putatively defining features see 7.3.6).

An alternative approach to the essentialist definition of ‘a language’ is the population-based definition. Having abandoned an essentialist definition of ‘a species’, it is the population-based definition which is now adopted by evolutionary theory:

The POPULATION theory of species is completely different from the essentialist theory (Mayr 1982:272). A species consists of a population of interbreeding individuals who are reproductively isolated from other populations. This property—interbreeding, and lack thereof between species—is the ‘essential’ property the individuals have in common. ... This is a radically different view of the species as a conceptual category. *The category definition is based on a specific set of individuals, and category membership is defined in terms of how the individuals interact with each other, not by any specific traits associated with all and only the individuals in the category.* (Croft 2000: 13 [italics added—MT])

The immediate linguistic implications of adopting this type of definition are as follows. ‘A language’ is defined (for phylogenetic purposes) as the set of utterances produced by a population of interacting speakers. The membership of this population of speakers is defined “in terms of how the individuals interact with each other” (*ibid.*). Thus, it is speaker interaction which is the defining characteristic of ‘a language’, not linguistic features *per se*. The linguistic characteristics of ‘a language’ flow out of this definition of a language, but they do not define the notion.

Sociolinguistic heterogeneity within the speech community is not a problem under this definition of ‘a language’ because it results from the patterns of interaction between speakers. On the other hand, communities of speakers no longer interacting with each other, but still sharing similarities of linguistic structure, are no longer a single (phylogenetic) language. Phylogenetic relations between lects are altered whenever there is a change in the social patterns of interaction between speakers.

While it is speakers’ *interactions* that define ‘a language’, the linguistic historian has no direct access to past interactions. Interaction patterns must be inferred from the differential presence of linguistic traits. Accordingly, linguistic phylogeny may be defined as *the study of the linguistic features which are diagnostic of speakers’ past and present interactions*.

3.2.3. The mechanisms of language change

Several recent studies explore the theoretical implications of adopting a non-essentialist definition of ‘a language’ in historical reconstruction.³ The discussion here focuses on the models of change articulated by Croft (2000) and Enfield (2003). Though using different terminologies, they endorse models with basically the same components and makeup. Croft follows the terms of evolutionary theory (especially Hull 1988) in articulating his model, while Enfield prefers to use terms from epidemiology (following Sperber’s [1996] model for the spread of cultural ideas in general). Both studies are influenced by Keller (1994) and committed to the principle of methodological individualism: “the explanation [of a language change] is based on

³ Cf. Thomason and Kaufman (1988), Milroy (1992), Keller (1994), Croft (2000), Aikhenvald and Dixon (2001), Enfield (2003).

acting individuals, not languages, structures, processes, or collectives” (Keller 1994: 121). James Milroy makes essentially the same point: “It is *speakers*, and not *languages*, that innovate” (J. Milroy 1992: 169; emphasis original).

For the purposes of reconstructing history, not only the *entities* of historical change, but also the *processes* of change must be spatiotemporally describable. Enfield requires a ‘no telepathy assumption’ (2003: 2; citing Hutchins and Hazlehurst 1995), which entails that the hearer has *no direct access to the speaker’s mind* but must make linguistic inferences based on the behaviour of his interlocuter—in particular her speech, as it is transmitted through air. This principle may seem to the reader to go without saying. However, until Weinrich, Labov and Herzog (1968), mainstream historical linguists often ignored spatiotemporal mechanisms. Some contemporary theorists (e.g. Lass 1997) continue to argue that historical linguistics should ignore these mechanisms.

In the model presented by Croft (2000), language change is broken down into two basic mechanisms. In evolutionary terms, they are: *altered replication* and *differential selection*. The first of these processes involves “the creation of a novel variant by altered replication of a lingueme in an utterance” (*ibid.*: 238). Croft terms this mechanism ‘innovation’ following James Milroy (1992). However, this term will not be used here, as “this would entail a redefinition of ‘innovation’, a basic term in historical linguistics” (Ross 1997: 256). Croft’s ‘altered replication’ will instead be referred to as *novel variation*. This process is a necessary but not sufficient condition for language change. That is, novel variation does not ensure language change, but language change requires that novel variation must have occurred. A similar point is made by Weinreich *et al.*: “Not all variability and heterogeneity in language structure involves change, but all change involves variability and heterogeneity” (1968: 188). The causal mechanisms for novel variation are functional, rather than social (Croft 2000: 8).

‘Differential selection’ entails the increase in frequency of a novel variant in speakers’ utterances. Croft and Enfield refer to this mechanism as ‘propagation’, a

term which is adopted in the methodology of this study.⁴ The causal mechanisms of propagation are social, not functional (Croft 2000: 8). Milroy (1992: 169) refers to this second process simply as ‘change’. Just as ‘novel variation’ is preferred over ‘innovation’ to denote the first process, the more restricted term ‘propagation’ is preferred over the broader term ‘change’.

Unlike novel variation, propagation is a sufficient condition for language change. The propagation of a novel variant in the speech community guarantees a change in the language. However, Croft leaves open the possibility that language change may occur without propagation, i.e. that it is not a necessary cause for *all types of structurally similar change*. “Drift” is a type of evolutionary change defined as “a shift in gene (lingueme) frequencies that occurs through altered replication but without selection [i.e. novel variation without propagation—MT]” (Croft 2000: 235; following Hull 1988). Linguistic phylogeny has been defined above as the study of the linguistic features which are diagnostic of *speakers’ past and present interactions*. Drift occurs apart from propagation and is not therefore diagnostic of speakers’ interactions. Consequently, drift is *of no phylogenetic significance*. Propagation may not be a necessary condition for *all* types of language change, but it is a necessary condition for *all phylogenetically significant language changes*.

Despite the possibility of drift, sociolinguists have argued that the use of linguistic variants by a population of speakers is generally not random, but is *socially structured*. This generalisation has been empirically verified by numerous sociolinguistic studies following the seminal work of Labov (1965, 1966). Weinrich *et al.* summarise the theoretical implications of these studies in such a way that dovetails with the conclusions above:

Linguistic change is not to be identified with random drift proceeding from inherent variation in speech. Linguistic change begins when the generalization of a particular alternation in a given subgroup of the speech community assumes direction and takes on the character of orderly differentiation. (1968: 187)

⁴ This process is also called ‘implementation of change’ (Trask 2000: 159).

In the terms of this study: only when the range of an innovative feature results from propagation is the change phylogenetically significant.

Before moving on from the mechanisms of change, it remains to discuss the possibility of independent and parallel innovations. The first mechanism of change—novel variation—is conditioned by the structural conditions already present in a lect. Especially in a dialect continuum, where nearby lects share a high degree of structural similarity, it is conceivable that the same novel variant may be replicated on more than one occasion in distinct sections of the continuum. If these separately replicated novel variants undergo propagation, then two phylogenetic outcomes are possible. The first is that the two distinct but structurally similar replications of novel variation undergo propagation through interconnected social networks such that they merge into a single propagation event. This scenario is diagnostic of a single propagation event, and has the same phylogenetic significance as if the novel variant had been replicated only once to start with and all other replications were the result of propagation. The second possibility is that the distinctly replicated variants undergo propagation within social networks that are not connected by speaker interaction. In this case, the final range of the innovation is not diagnostic of a single propagation event, but rather two (or more) propagation events. Under this scenario, independent and parallel propagation events of a structurally similar innovation may mask phylogenetic relations—defined as they are by single, networked, propagation events. It is the task of section 3.4.1 to set out diagnostics which can filter out such changes in a principled manner.

To summarise the model: the basic components of language change are novel variation and propagation. Novel variation is a necessary condition for change. Propagation is a necessary and sufficient condition for *phylogenetically significant* change. If the conventional replication of linguistic features is broken through the propagation of a variant V, then a phylogenetic change event has taken place. The population of speakers using utterances characterised by V is phylogenetically distinct from all other populations of speakers, and termed a ‘Propagation Network’. The term ‘Propagation Network’ is intentionally chosen here, instead of ‘Speech Community’, for two reasons. Firstly, ‘Propagation Network’ is explicit in defining

the population of speakers in terms of a Propagation Event. The term SC, while widely used in historical linguistics (with more than one definition) is not explicit about *propagation*, and hence would need to be redefined with a very specific (and unconventional) sense. Secondly, a SC may include multiple coexisting PNs, all defined by PEs.⁵ The concept of a SC is multi-layered and complex; the concept of a PN is flat, defined by a PE. Both concepts are useful for historical reconstruction. The utterances produced by the PN of speakers are the ‘Propagation-Defined Language’. Lects that inherit linguistic material from this PDL constitute a phylogenetic subgroup (cf. 3.3.3).

We now consider the implications of this theoretical position for methodology of historical reconstruction.

3.3. Critical review of the Comparative Method

The Comparative Method (CM) is the most successful tool in the historical linguist’s kit;⁶ and yet, ever since the method enjoyed its first great successes in the 19th century the criticism has been voiced that linguistic history is often not as simple as comparative reconstruction might have us believe. This point has been argued by practitioners of dialect geography and by sociolinguists alike. In a dialect continuum situation the prognosis is even worse; not only might the CM simplify linguistic history, it might distort it all together (see 3.3.1). The results of the CM are traditionally interpreted using the essentialist notion of an homogenous protolanguage, which splits into separate daughter languages. This assumption is, in general, not appropriate for dialect continua. Can the CM be separated from the essentialist definitions of ‘a language’ and linguistic phylogeny? This question is addressed in section 3.3.2, with the implications for subgrouping theory covered in 3.3.3.

⁵ I am grateful to Dr. Harold Koch for his comments on an earlier draft of this chapter which led to this formulation of the possible relations between a SC and a PN.

⁶ For readers familiar with the NIA literature: when I speak of ‘the Comparative Method’ I am referring to the method of ‘controlled reconstruction’ as practiced by Southworth (1958), Pattanayak (1966), Maniruzzaman (1977), etc.; and not to the ‘pseudo’-Comparative Method that I discuss in 1.8 which is not controlled by the principle of the regularity of sound change.

3.3.1. A case study from Indo-Aryan

Within the NIA literature, there is an excellent study by Southworth (1958) which demonstrates that (1) in this case the proto-phonology reconstructed by the CM is historically non-contemporaneous; and (2) the sequencing of reconstructed changes cannot be established by the CM alone. The central facts and key findings of this study are summarised below.

In his doctoral dissertation, Southworth (1958) applied the CM to a reconstruction of the historical relations between four major Indo-Aryan lects: Panjabi (Punjabi), Hindi, Bengali and Marathi. The result is a reconstructed “proto-phonology” for a “protolanguage”, which he uses to reconstruct “proto-words”. However, on comparison of these results with ancient historical records for Middle and Old Indo-Aryan it becomes apparent that “the protolanguage cannot be assumed to represent any Indic dialect which could actually have existed; it combines different chronological stages ... and different dialectal representations” (1958: 160). The method leads Southworth to reconstruct lexical items such as *két ‘field’ and *g̃in- ‘count’, which correspond to Sanskrit *kṣétra* and *gṛnti* respectively.⁶ The problem is that the reconstructed items combine non-contemporaneous phonological features, and thus the reconstruction is not historically accurate. In this instance, the CM failed to reconstruct reliable linguistic history. Readers who wish to skip the finer details of this case study may move on to section 3.1.2.

The set of proto-phonemes which are reconstructed by Southworth based on recurrent correspondences includes two proto-phonemes labelled as *k and *i̇. Southworth compares the cognates containing reflexes of these proto-phonemes with putatively ancestral Old Indo-Aryan forms to find that *k is the mostly regular reflex of Sanskrit *kṣ* (1958: §133), and *i̇ is the mostly regular reflex of Sanskrit *ṛ* (1958: §148). Here ‘mostly regular’ means that *most but not all* of the contemporary forms which are plausibly derived from Sanskrit forms containing *kṣ* and *ṛ*, are reconstructed with proto-phonemes *k and *i̇ in the positions that correspond to Sanskrit *kṣ* and *ṛ*, respectively.

⁶ The symbol *ṛ* is used in Indic studies for ‘syllabic r’. The open circle below the *r* is not to be confused with the IPA convention for ‘voiceless’.

A small number of etyma with phonemes that correspond to Sanskrit *kṣ* are reconstructed as *ç instead of the expected *k, and a small number of Sanskrit forms with *ṣ* are reconstructed with *i, *a, or *u, rather than *ī. Southworth argues that this partial mis-match between the written Sanskrit forms and the reconstructed proto-phonemes is the result of mixing during the proto-stage between (A) dialects maintaining the phonemic distinctions of Sanskrit *kṣ* and *ṣ* and (B) dialects that had lost these distinctions by merging Sanskrit *kṣ* with *çh*, and *ṣ* with certain other vowels. This hypothesis of borrowing to explain the irregularity in correspondences is a fair one. The main point is that, *on the whole*, the reconstructed protolanguage represents a lect which had *retained* the phonemic distinctions corresponding to Sanskrit *ṣ* (*i) and *kṣ* (*k). These proto-phonemes are accordingly included in the reconstructed proto-words, for example: *két ‘field’ and *gīn- ‘count’.

The presence of these phonemic distinctions in the protolanguage causes major problems in dating the protolanguage. Sanskrit *kṣ* was lost as a distinct phoneme through merger with other phonemes prior to the 3rd century B.C.—except in the Kashmir area where it is retained as a distinct phoneme up to the present day. Evidence for the dating of this merger comes from the Asokan edicts—inscriptions of the 3rd century B.C.—which record the regional Middle Indo-Aryan dialects of the time. Southworth concludes that in order for the CM-reconstructed parent language of Panjabi, Hindi, Bengali and Marathi to include a distinct proto-phoneme *k (continuing Sanskrit *kṣ*) the protolanguage must represent a language spoken prior to the 3rd century B.C. (1958: §163). Furthermore, Sanskrit *ṣ* (which corresponds in most cases to proto-phoneme *i) was lost as a distinct phoneme “in all later dialects” (presumably later than Sanskrit, including all MIA lects), with a few sporadic cases of merger even in the earliest Sanskrit. In order to account for the reconstruction of *ī (continuing Sanskrit *ṣ*) as a distinct proto-phoneme, Southworth says that the parent speech of Panjabi, Hindi, Bengali and Marathi must be dated *considerably earlier even than the 3rd century B.C. chronology suggested for *k above*.

In contrast with the proto-phonemes whose presence indicates an early MIA or OIA protolanguage, Southworth shows that the protolanguage also includes features which *are much more recent innovations*. The protolanguage represents a lect which (1)

lacks the Sanskrit final vowels (1958: §131), (2) lacks the Sanskrit single intervocalic stops (1958: §134), and contains assimilated and reduced counterparts of the Sanskrit intervocalic stop clusters (1958: §132). The first of these characteristics—the absence (or in some cases coalescence) of final vowels—was the result of a decidedly ‘New’ (or ‘modern’) Indo-Aryan change (1958: §160). The OIA final vowels were retained at least up to the time of the Prakrit grammarian Hemacandra, who was born in Gujarat in 1089AD. In many NIA lects these vowels were retained even up to the 16th century AD (cf. Masica 1991: 196). The second set of protolanguage features which complicate its dating are the reflexes of OIA medial stops. The single intervocalic stops had been lost by the time of the protolanguage, and the clusters had generally been reduced (Southworth 1958: 137-8). However, in the MIA literature the OIA stops are unchanged as late as Aśvaghōṣa’s dramas of the 2nd century AD (Southworth 1958: 155).

In summary, the “protolanguage” reconstructed by the CM incorporates: features lost before MIA ($\underset{\cdot}{r} = *i$), features lost during early MIA ($k\underset{\cdot}{s} = *k$), features innovated later in MIA (changes to medial stops), as well as features innovated during NIA (loss or coalescence of final vowels). The result is that proto-words reconstructed by the CM (for example: $*k\underline{e}t$ ‘field’ and $*g\underline{i}n-$ ‘count’) are historically inaccurate and unreliable. They combine non-contemporaneous phonological features.

The implications of this failure of the CM are considerable. *Southworth only knew the reconstructed protolanguage was historically fallacious because he had written records with which to compare his reconstruction.* In the case of KRNB, and indeed of most NIA lects, no or few written records are available to us. Is the CM still useable? Can its results be interpreted in a way that avoids the kind of historical distortions illustrated above?

3.3.2. Cutting away essentialism from the Comparative Method

It is not the intention of this chapter to throw the baby of the CM out with the bathwater. One failure of a method does not invalidate its many successes. Nonetheless, changes must be made in how we apply the classical CM if we are to satisfy the desiderata outlined in section 3.1.1.

Traditional assumptions of uniform protolanguages and discrete phylogenetic divisions between languages have failed in some, but not all cases. For example, the CM has been applied with great success in reconstructing the history of the Austronesian language family. In many cases the proto-phonemes reconstructed from Austronesian phonological correspondences can be perspicuously interpreted in terms of interstage languages interrupted by discrete splitting events (cf. Pawley & Ross 1993). However, even within Austronesian there are linguistic histories which require other concepts and kinds of genetic relations in order to make sense of the correspondences (cf. e.g. Ross 1997, 1998). Most notable in this respect is Geraghty's conclusion about how to interpret the Fijian correspondences in terms of historical events.

Exclusively shared features merely serve to suggest that languages were once in contact, and if features are shared exclusively by languages which are not in contact, those features constitute strong evidence that the languages were once in contact. In a dialect chain such as exists in Fiji, however, all adjoining communalects have generally maintained some degree of contact, so any observed innovation can be attributed to any time between the establishment of the dialect chain and the present. *A feature found all over Fiji, therefore, may be a recent innovation.* (Geraghty 1983: 277 [italics added—MT])

This historical finding complicates historical reconstruction, because the correspondences generated by lectal unity followed by division may look identical to those generated by lectal division followed by reticulation of the division. Some linguists have responded to this challenge with pessimism:

It is a well-known axiom that the Comparative Method is powerless if two (or more) languages undergo the same change after split-off point. ... What makes the Comparative Method work is that different languages usually undergo different changes. (Anttila 1989: 252)

This statement is an important caution, but overstates the point. The CM can be defined in a broad as well as a more narrow sense, and they are not both equally

impotent in the face of common innovations after differentiation. A broad definition of the CM includes the following components:⁷

CM (broad definition)

- 1) construct correspondences between phonemes in putative cognate sets;
- 2) reconstruct proto-phonemes and subsequent changes which account for the correspondences as regular phonological reflexes;
- 3) interpret the reconstructed proto-phonemes as a contemporaneous proto-phonology of a protolanguage;
- 4) reconstruct the proto-lexicon by substituting the reconstructed proto-phonemes in the appropriate positions of the constructed cognate sets.⁸

This algorithm may not yield reliable and realistic historical reconstruction in cases where the historical divergence of lects is non-discrete. In such cases (as illustrated by Southworth above), the reason the method fails is that steps 3 and 4 implicitly rely on essentialist notions of ‘a language’ and linguistic phylogeny. These notions lead to the false assumption that steps 1 and 2 somehow guarantee the reconstructed proto-phonemes as contemporaneous constituents—a ‘proto-phonology’—of a uniform and historical ‘protolanguage’. However, as Geraghty concludes for Fiji in the quote above “A feature found all over Fiji ... may be a recent innovation”.

There are two ways of dealing with this problem of more recent changes reversing a prior division between lects. Firstly, the problem can be explicitly acknowledged and systematically excluded from the scope of subgrouping. Koch (1996), as part of a more detailed algorithm for the Comparative Method (cf. footnote 8), outlines how such a systematic exclusion is normally practiced as part of the Comparative Method:

⁷ Still broader definitions could be given, including the study of loan words, linguistic areas, etc. However, the breadth of definition given here is sufficient for the purposes of the present discussion.

⁸ A similar, but more exhaustive algorithm of the steps involved in the CM is outlined by Ross and Durie (1996) and also by Koch (1996). Step (1) here corresponds to Ross and Durie’s steps (2-3) and Koch’s steps (1-3). Steps (2-3) here are collapsed in Ross and Durie’s step (4) as they make no distinction between (i) the reconstruction of proto-phonemes and (ii) their interpretation as a contemporaneous system. Koch’s algorithm is considerably more nuanced than the one outlined in the text here, with step (2) here corresponding to his steps (4-6) and step (3) corresponding to his steps (7-9). Step (4) here corresponds to Ross and Durie’s step (7) and Koch’s step (10).

7. Where two or more languages have undergone the same change—and *this change must be ordered chronologically before other changes which are not shared by the languages in question*—posit (i) an intermediate protolanguage ancestral to just the languages in question (which are thus defined as a subgroup) and (ii) a single change that took place only once at some time intermediate between the protolanguage and the intermediate protolanguage. (Koch 1996: 221 [italics added—MT])

The problem faced by this approach is *how to establish this chronology* given the findings from Geraghty (1983) outlined above? If the correspondences generated by reticulation of earlier phylogenetic divisions look identical to those generated by simple phylogenetic division, then *how are reticulations to be identified in order to exclude them?* A further question for this approach is: *why is it necessary to exclude reticulation events from phylogenetic importance?* If such an exclusion is consistently applied then we must exclude all changes which are propagated through linguistically heterogeneous speech communities. The problem is, of course, that sociolinguistics has shown “orderly heterogeneity” to be a natural and normal characteristic of languages and their speech communities (Labov 1966, 1994, 2001, Weinrich *et al.* 1968, L. Milroy 1987, J. Milroy 1992), 1997, Croft 2000).

The second valid way of dealing with the problem of common changes subsequent to differentiation of lects is to: (a) abandon the essentialist assumption that ‘a language’ is structurally homogenous; (b) throw open the definition of phylogenetic ‘subgrouping’ to include those sets of lects defined by a Propagation Event (regardless of whether it occurred prior to differentiation); (c) not assume that the reconstructed proto-phonemes automatically constitute a contemporaneous proto-phonology; and (d) develop further methods for sequencing the innovations (see 3.4.3 below), in order to satisfy the methodological desiderata (section 3.1.1). Step (c) implies a narrower definition of the CM than the one given above.

CM (narrow definition):

- 1) construct correspondences between phonemes in putative cognate sets;
- 2) reconstruct proto-phonemes and subsequent changes which account for the correspondences as regular phonological reflexes.

Under this narrow definition the CM is stripped of as many assumptions about subgrouping as possible,⁹ so as to prevent covert chronologies from sneaking into the reconstruction without warrant. When interpreting correspondences in a dialect continuum situation, the linguistic historian must keep in mind that *the shared features may have been more recently innovated than the divergent features*. Further criteria must be satisfied before the sequencing of shared and divergent features can be established.

3.3.3. Non-essentialist subgrouping

Before we move onto the methods for sequencing innovations, some discussion is in order regarding the notion of a phylogenetic subgroup. Traditionally, subgroups are defined on the basis of changes that antedate any phylogenetic split between the lects in question. However, the exclusion of reticulation events from subgrouping importance is not a requirement of the sociohistorical theory of phylogenesis outlined above. Within this framework, a subgroup is defined by the continuous transmission of linguistic material from a propagation-defined language. The PDL is defined not by its structural homogeneity, but by a PE. Whether or not the range of this PE extended beyond the range of earlier PEs (creating overlapping isoglosses) is beside the point. This non-essentialist definition of phylogenesis does not insist on the Maxim “once a subgroup, always a subgroup”.

Such a theoretical position is, of course, a considerable departure from the traditional family tree model of phylogenesis and subgrouping. However, even in evolutionary biology it is recognised that phylogenetic reticulation—reversal of prior phylogenetic division—occurs commonly in the evolution of both plants and parasites.¹⁰ Plant species undergo hybridization, and in addition, parasites undergo ‘horizontal gene

⁹ The hedging words are necessary here because even in step (2) we cannot avoid some minimal subgrouping principles. A level of judgement is involved in assessing during the reconstruction of proto-phonemes how many tokens under a particular correspondence are sufficient to justify a proto-segment rather than a set of loanwords. When a correspondence set is attested by only a few tokens, the best approach is to be conservative and put questionable sets to one side as a temporary measure. Their significance can be evaluated at a later stage in the process—after some progress in the reconstruction of chronology of changes and subgrouping relations—based on the correspondence sets attested by a greater number of tokens. I am grateful to Beth Evans for bringing this necessary qualification to my attention.

¹⁰ See Mufwene (2001: 152) for a discussion of similarities between linguistic history and the evolution of parasites.

transfer' (as opposed to the 'vertical' gene transfer that occurs in reproduction of organisms). Huson and Bryant write:

Phylogenetic analysis has changed greatly in the past decade, including the more widespread appreciation of the idea that evolutionary histories are not always tree-like, and may, thus, be best represented as reticulated networks rather than as strictly dichotomous trees (Morrison 2005). The evolutionary history of a set of taxa is usually represented by a phylogenetic tree, and this model has greatly facilitated the discussion and testing of hypotheses. However, it is well known that more complex evolutionary scenarios are poorly described by such models. Further, even when evolution proceeds in a tree-like manner, analysis of the data may not be best served by using methods that enforce a tree structure but rather by a richer visualization of the data to evaluate its properties, at least as an essential first step. Thus, phylogenetic networks should be employed when reticulate events such as hybridization, horizontal gene transfer, recombination, or gene duplication and loss are believed to be involved, and, even in the absence of such events, phylogenetic networks have a useful role to play (Huson & Bryant 2006).

Though I do not believe it is necessary for historical linguistic models to ape those of evolutionary biology, it may perhaps help persuade some readers of the viability of alternative phylogenetic models to learn that the necessity and usefulness of such models is currently recognised even within evolutionary biology.

Returning to the field of linguistics, Ross (1988) initiated a categorisation of subgroups as either "families" or "linkages". In Pawley & Ross (1995) the terminology was adjusted to "innovation-defined" vs. "innovation-linked" subgroups (subsequently adopted in Ross 1997, Thurgood 1999, Kirch 2001 and Lynch, Ross and Crowley 2002). An innovation-defined subgroup is "defined by shared innovations relative to a protolanguage" (Ross 1997). An innovation-linked subgroup, on the other hand, is a subset of lects characterised by non-coterminous innovations, with no innovation extending to the subgroup as a whole:

whereby, say, languages A, B, C, and D reflect one innovation set, languages C, D, E, and F another set, languages D, E, F, and G another, and languages G, H and I yet another innovation set ... When a group displays this kind of pattern of overlapping innovation sets, it is an ‘innovation-linked subgroup’. In this case, we infer that its members are descended from an earlier dialect network. Innovations occurred in various dialects, each spreading into neighbouring dialects, but not across the whole network. The crucial point about an innovation-linked subgroup is that its innovations give us no evidence of an exclusively shared protolanguage. (Lynch *et al.* 2002: 92 [see also the diagram on the same page])

There are two components to the definition of this category:

- 1) the subset of lects in question is not derived from an exclusively shared protolanguage;
- 2) the precise phylogenetic relations between these lects cannot be determined beyond this level of detail. That is, the sequencing of the PEs is irrecoverable.

Accordingly, this categorisation is useful in contexts where (i) a dialect continuum stage is followed by more discrete divergence of lects, and (ii) the sequencing of changes during the dialect continuum stage is unknown. However, for studies such as the present one the aim is not just to label the whole dialect continuum as an “innovation linked subgroup” and leave it at that.¹¹ Rather, the aim is to reconstruct as far as possible the details and chronologies of PEs that occurred throughout the course of the dialect continuum’s history. This may be illustrated by the same abstract example given in the quote from Lynch *et al.* above. The hypothetical data are characterised by four innovation sets:

Inn. set #1 {A,B,C,D}

Inn. set #2 {C,D,E,F}

Inn. set #3 {D,E,F,G}

Inn. set #4 {G,H,I}

¹¹ I am not saying that those who have employed the notion of an innovation-linked subgroup had any choice in the matter. Where it is impossible to recover the sequencing of innovations because of a lack of data, we have to cut our losses.

There is no innovation common to all lects A-I, so the complete set of lects does not constitute an innovation-defined subgroup. However, each of the subsets #1-#4 is defined by a PE, and therefore each of these sets is of phylogenetic significance. Each of the sets #1-#4 defines a subgroup of lects *unless we insist on the theoretical impossibility or irrelevancy of reticulated phylogenetic divisions*. Under the theory presented here, reticulation is of phylogenetic significance and hence does not exclude sets #1-#4 from defining four distinct subgroups (cf. page 48).

How would this data set be approached within the sociohistorical framework of linguistic phylogenesis? Firstly, by considering the diagnostic value of the innovations to ensure that they are indeed diagnostic of PEs (the diagnostics are discussed below in section 3.4.1). Secondly, linguistic, textual, and (attested or hypothetical) sociohistorical criteria would be used to sequence the changes where possible (cf. 3.4.3).¹² Thirdly, the phylogenetic relations of the four subgroups would be modelled using an adjusted phylogenetic tree (cf. 3.4.4), rather than the traditional family tree. If it turns out that the sequencing of innovations is not recoverable by the criteria outlined in section 3.4.3, then saying that lects A-I constitute an innovation-linked subgroup—defined as “descended from a dialect continuum, with propagation events not co-terminous”—is as much as we can do. More precise phylogenetic relations are only recoverable if the sequencing of innovations can be disambiguated. The methodology for this disambiguation is addressed in detail below.

3.4. Reconstructing Propagation Events in linguistic history

Recalling that it is propagation events (not structurally similar features) which define phylogeny, the linguistic historian must first verify that *the range of the innovative feature is the result of a propagation event*. There are two steps to this verification process (cf. Croft 2000: 15-16):

¹² Textual evidence is absent for Oceanic history, and sociohistorical evidence is also absent except for broad archaeological clues. As a result, the criteria to be used are linguistic (cf. 3.4.3.1) and hypothetical-sociohistorical (based largely on considerations of geographical plausibility of propagation, cf. 3.4.3.3).

- 1) Ensuring that the feature is *innovative* by excluding (as far as possible) the possibility of retention from a more historically distant stage. In Croft's evolutionary terms, this amounts to excluding 'symplesiomorphies'—retained traits from an earlier parent population.
- 2) Ensuring that the range of the feature is diagnostic of a single propagation event by excluding (as far as possible) the possibility of drift, or of independent and parallel propagation events.

The exclusion of specific changes as possibly the result of independent and parallel development must be principled and not *ad hoc*. The next section outlines a set of diagnostics which are intended to satisfy (as far as possible) the second step of historical verification.

3.4.1. Diagnostics for reconstructing Propagation Events

The diagnostics presented in this section have been developed with a particular sociolinguistic context in mind—the dialect continuum. Recall from section 3.2.3 that novel variation of linguistic structure is the first mechanism of language change, and that this variation is conditioned by the linguistic structures already in place. However, instantiations of structurally similar innovations are only diagnostic of a propagation event if they are connected by interaction between speakers. Structural similarity alone is not what defines linguistic phylogeny. Accordingly, the diagnostics are not limited to structural criteria (Diagnostic #1), but also include sociolinguistic and sociohistorical criteria (Diagnostics #2 and #3) for reconstructing PEs in linguistic history.

3.4.1.1. First diagnostic: linguistic complexity of the innovation

The more complex the linguistic conditioning of an innovation, the less likely it is that the innovation was replicated and propagated independently. For this reason, phonological changes which are specified for particular morphological positions have greater diagnostic value than straight phonological changes. Similarly, changes involving cognate inflectional morphology (paradigmatic relations between cognate forms) are unlikely to have been independently repeated and are thus of high

diagnostic value (Nichols 1996). For example, the innovation of the two proto-verbal endings **-ɔw̃* and **-ɔ̃*, with paradigmatic relations ‘1.SG’ vs. ‘1.PL’ respectively, is of high diagnostic value because it is highly unlikely that this precise combination of forms and functions was independently replicated in distinct PNs (cf. 6.4.1.2).

There are certain kinds of reductions in complexity which should be given a low diagnostic value based on this diagnostic. I have in mind here (a) the loss of a variant from a lect, and (b) the loss of an element in a construction. In the first case, if two lects both inherit two variants with the same function, then the regularisation of one of these variants (and the consequent loss of the other) is of low diagnostic value. For example, the genitive case marker in proto-Magadhan varied between *-kara* and *-kera*. The phasing out of one of these variants in favour of the other is not to be considered diagnostic of a PE because of the high possibility that such regularisation may have happened independently (see further section 3.4.1.4). In the second case, an element of a construction is *dropped out*, with a consequent change in the structure of the construction. Such constructional reduction is of lower diagnostic value than were an element to be *added* to the construction, because it is more difficult on linguistic grounds to exclude the possibility that the *dropping out* of an element occurred independently and in parallel. An example of this type of change is the deletion of nouns of multitude from plural pronominal constructions: *pronoun-GEN(-a) + noun of multitude* ‘PL pronoun’ > *pronoun-GEN(-a)* ‘PL pronoun’ (see 5.3.3). This change would be of greater diagnostic value for reconstructing a PE if new linguistic material had been *added* to the construction rather than *taken away*.

3.4.1.2. Second diagnostic: ecological distinctiveness of the innovation

In a dialect continuum, speakers of different varieties are rarely perfectly isolated from each another. Speakers of one variety often have contact with at least one politically official variety (“standard language”), as well as the varieties spoken by geographically and socially contiguous communities. The sociolinguistic context is thus characterised by diglossia and multilingualism (cf. Ferguson 2000). I use the term ‘linguistic ecology’ or simply ‘ecology’ to refer to this sociolinguistic context, and ‘ecological distinctiveness’ to refer to whether an innovative feature is

‘distinctive within the ecology’. That is, does the innovation in the local variety bear resemblance to features of the regionally superposed language? and if so, can the innovation be construed as contact-induced through diglossia? If the answer to these questions is in the affirmative, then the change is not diagnostic of a PE. For example, a diglossic relation to Hindi is part of the linguistic ecology of the Rangeli, Mahayespur and Kishanganj KRNB lects (three of the lects included in the reconstruction of Chapter 4) because these varieties are spoken either within, or in close proximity to, Bihar state where the official language and language of education is Hindi. In the linguistic data collected for these three KRNB lects, there is evidence of loanwords from Hindi as well as structural convergence with Hindi norms. Borrowing may be illustrated by [MI 8.], which introduces the non-inherited morpheme /sɛ/ ‘ABL’. The same form-function mapping is found in Hindi. Therefore this change is not ecologically distinctive, because it resembles the features of the regionally superposed language. Structural convergence can be illustrated by the unrounding of *ɔ > [ʌ] or [ə] in these same three KRNB lects (cf. section 4.4.5). This unrounding process brings the pronunciation of shared NIA vocabulary in RL, MH and KS into closer conformity with Hindi norms. The similarity with Hindi of the novel variant phoneme /ʌ/ means that this change is not ecologically distinctive. The implications of the non-distinctiveness of these changes in the ecology are as follows: the presence in RL, KS and MH of an unrounded pronunciation of *ɔ cannot diagnose a propagation event *connecting these three lects*. All three of the lects are in a diglossic relationship with Hindi, and so the novel variation could have entered each of the lects independently as a result of their linguistic ecology. Similarly, the introduction of /sɛ/ ‘ABL’ is not diagnostic of a propagation event connecting these three lects because this morpheme was possibly borrowed independently in each of the sites as a result of diglossia.

The implications of ecologically distinctive changes are exactly opposite. They are not explained by diglossia, and are diagnostic of a propagation event. A case in point is the innovation of a singular and plural distinction in the secondary first person verbal endings (cf. 6.4.1). This change is attested across KRNB. However, the major superposed languages in the KRNB area—Bangla and Asamiya—lack this

distinction. Therefore the change is ecologically distinctive; it cuts “against the grain” of the pressure to conform to the linguistic structures of the superposed lect.

Changes that occur in a lect due to contact with a second, completely unrelated lect, are a further type of ecologically non-distinctive (and hence non-diagnostic) change. This type of change can again be illustrated from the history of KRNB. There are phonological features of KRNB which are structurally similar to corresponding features in eastern Bangladeshi varieties, namely the alveolar articulation (ts,ʈ,...) of the inherited laminal series (*tʃ,*ʈʃ,...; termed “palatals” in IA studies). Chatterji (1926: 79) hypothesises that this structural similarity is due to contact in both areas with Tibeto-Burman lects. If we accept this hypothesis, and it seems a good one, then this has implications for the diagnostic value of the alveolarisation of the inherited laminals (cf. section 4.3.9). The alveolarised laminals in north and east Bengal are not diagnostic of a single PE, because this feature was possibly replicated independently due to Tibeto-Burman contact. This change does not, therefore, identify KRNB and eastern Bengali as a phylogenetic subgroup.

3.4.1.3. Third diagnostic: Sociohistorical plausibility of unified propagation across the range attested by the innovation

Face-to-face interaction between speakers leads to the propagation of novel variants (Trudgill 1986: 39), and hence ranges of innovations may be expected to correlate with patterns of speaker interaction. A range which encompasses a geographically contiguous and social connected ‘zone’ is plausibly explained as the result of propagation through face-to-face interaction. This is the scenario envisaged by the ‘wave model’ of language change. Sociohistorical plausibility (cf. 3.5) revolves around whether or not, for some stage in history, we have reason to reconstruct geographical contiguity and social connection which could account for the propagation of this innovation through face-to-face interaction. The sociohistorical argument may be based on attested social history, or in the absence of records, on hypothetical sociohistorical scenarios.

In addition to wave-like patterns of propagation, dialectological and sociolinguistic studies have found that the range of an innovation sometimes extends to larger

population centres, skipping over the less densely populated areas in-between. This pattern of propagation is explained by the ‘gravity’ or ‘hierarchical’ model of language change (Trudgill 1974, Chambers & Trudgill 1998, Wolfram & Schilling-Estes 2003). A representation of the model of change is given in Figure 3-1.

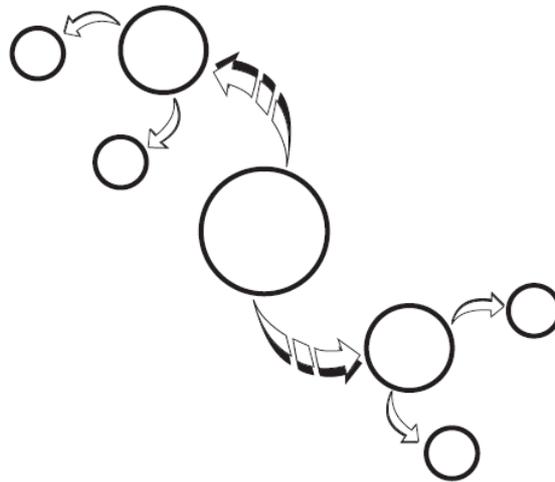


Figure 3-1. The gravity model of linguistic propagation (reproduced from Wolfram & Schilling-Estes 2003: 724)

In the case of hierarchical patterns of propagation, the sociohistorical plausibility stems from considerations of speaker *density* as well as *distance*: the more dense the population of speakers, the greater the number of interaction events, and the more likely that propagation of a variant will occur through those interaction events. Consequently, a variant may be propagated between utterance pools of two large population centres before the propagation extends to the utterance pools of smaller intermediate population centres. Both the gravity and wave models of propagation should be kept in mind when making judgements about the sociohistorical plausibility of an innovation.

When the range of an innovation is neither geographically contiguous, nor explicable on the basis of hierarchical propagation between larger population centres, then the onus is on the linguistic historian to provide a sociohistorical explanation that can account for the range as the outcome of propagation through speaker interaction. Without a sociohistorical account, there may be little reason to conclude that the range is the result of a unified propagation event, and considerable reason to suspect independent replication followed by independent propagation events. Thus,

considerations of sociohistorical plausibility—by way of (attested or hypothetical) scenarios—have a significant role to play in distinguishing between single and disconnected propagation events.

One sub-type of non-diagnostic change requires special mention in the context of dialect continua and is discussed in the next section.

3.4.1.4. Inherited variation with subsequent independent regularisation

In morphological systems we commonly find—whether by reconstruction or in historical texts—evidence for the historical presence of two forms serving the same general function, perhaps with subtle (and unreconstructible) differences in the grammatical, stylistic or sociolinguistic conditioning of each variant. In the descendant systems, one of these two forms may be regularised for the function in question, with the resultant loss of the other historical variant in that lect. The diagnostic value of this regularisation of inherited variation is low.

As illustration of this phenomenon, consider the Genitive case forms in eastern Magadhan lects: *[-er, -or] < MIA. *-kera, -kara* (the final vowel and medial *-k-* were lost in early NIA). The form **-er* is found in most contemporary Bangla dialects, as well as in the 8 KRNB sites (see further 5.3.5). The **-or* form is found in Asamiya lects (to the north-east) and in the BN site which is the KRNB lect most closely associated with Asamiya. So far the range of each variant is relatively contiguous, and the regularisation change might be proposed as diagnostic of a propagation event resulting from interaction between speakers. However, looking further afield, the */-or/* form is also found in *Kharia Thar* to the south-west of KRNB (the opposite side to Assam), as well as in *Middle Bangla texts* alongside the */-er/* form (Chatterji 1926: 717).

In cases like this one, unless the regularisation of one variant has complex conditioning—thus arguing against parallel development by Diagnostic #1—the range of straightforward regularisation is not diagnostic of a unified propagation event because of the considerable possibility that regularisation occurred through independent and parallel propagation events. In the example above, neither of the two variants is regularised with complex conditioning—it is simply a matter of one being

selected over the other as the marker of Genitive case. If a plausible argument can be made that the variability is inherited from an earlier common stage (either based on comparative reconstruction or historical texts), then the regularisation of this variability is not diagnostic of a PE because of the possibility that it occurred independently and in parallel. Consequently, the distribution of *-or in Assam and in Kharia Thar is not diagnostic of a propagation event—it is more likely to be the result of independent and parallel regularisation of the *-or variant. Likewise, the regularisation of the *-er variant (across KRNB, Bangla lects, Mal Paharia, etc.) is not diagnostic of an interconnected propagation event. The point is not that speaker interaction was not causal in the propagation of these changes at some local levels, but that there are *no linguistic criteria* for distinguishing which parts of the range were connected developments and which were independent and in parallel. This class of changes, non-diagnostic of propagation events, is referred to throughout this study as *inheritance of variation with subsequent regularisation*.

3.4.2. Propagation Events (PEs) and Speech Community Events (SCEs)

We have seen above that plausible sociohistorical scenarios can play a significant role in diagnosing unified propagation events (3.4.1.3). The causal relationship between social interaction and propagation of linguistic changes also means that, where there is disjunction between the ranges of successive PEs, this disjunction may be evidence of *a change in the social structure of the speech community*. This method of using linguistic evidence to reconstruct changes in social structure has been developed by Ross (1997) with an eye to recovering aspects of the unrecorded social and cultural history of the Oceanic-speaking peoples.

Given the immediate context of the preceding section, a brief caveat too important to be relegated to a footnote needs to be added to this reconstruction principle. Propagation events *that are used to reconstruct changes in social structures* must be established by either Diagnostic #1, Diagnostic #2, or Diagnostic #3 based on *attested* sociohistorical scenarios only. Reconstruction of social history *cannot* be by virtue of PEs diagnosed primarily on the basis of *hypothetical* sociohistorical scenarios (a sub-

category within Diagnostic #3). This restriction is required in order to avoid circularity of the following abstract kind:

Hypothetical sociohistorical scenario S_2 diagnoses linguistic change $X > Y$ as the result of $PE_{X>Y}$, despite no great linguistic complexity (Diagnostic #1) or ecological distinctiveness (Diagnostic #2). Disjunction between the range of $PE_{X>Y}$ and other historically antecedent PEs is evidence of a Speech Community Event (SCE) which derives scenario S_2 from a prior state, S_1 .

This circular sociohistorical reconstruction is avoided if the PEs are diagnosed either by Diagnostics #1, #2, or #3 with reference to *attested* sociohistorical scenarios.

Ross' method of sociohistorical reconstruction is based upon the crucial distinction between a "linguistic event (an innovation in a language)" and a "speech community event (a change in the life of that community)" (*ibid.*: 214). Ross holds that "an innovation becomes part of the history of the language only when it spreads through the network to become a stable feature in the speech of a group of speakers" (*ibid.*: 214-5). Thus the intended reference of his terms "linguistic event" and "linguistic innovation" is the same as the term 'propagation event' used in this study (defined in 3.2.2).

Speech Community Events include "major changes in [social] network size and/or structure" (*ibid.*: 215). These major reshaping of network structure may be reconstructed from disjunctions between PEs on two conditions. Firstly, the sequencing (relative chronology) of the PEs must be known. For example, let us say that PE_1 was followed by PE_2 , with a disjunction between the Propagation Networks (PN_1 and PN_2) diagnosed by the two changes. If the range of PN_2 is more *restricted* than PN_1 , then this may be evidence for the creation of a communicative division in the Speech Community between the time of PE_1 and PE_2 . If on the other hand PE_1 was followed by a more *expansive* PE_2 —the range of PN_2 including and surpassing PN_1 —then this may be evidence for a communicative re-integration in the Speech Community at some time after PE_1 and before PE_2 .

The second condition for reconstructing SCEs—which explains the hedged use of 'may be' in the previous paragraph—is that the disjunction between PNs must be

more perspicuously explained by a change in SC structure rather than as the continuation of previously existing PNs within a single complex Speech Community.

To continue the hypothetical example above, it may be that the disjunction between PN₁ and PN₂ does not reflect a change in the SC structure, but just reflects co-existing networks within a complex SC. For the disjunction in PNs to be diagnostic of a SCE, the explanation with reference to a SCE must be more plausible than the possibility of co-existing complex social structures of speaker interaction.

To summarise the methodological principle outlined in this section:

- Given the causal relationship between patterns of social interaction and patterns of propagation of linguistic innovation;
- If
 - there is a disjunction between two PNs,
 - and the sequencing of the PEs is reconstructible,
 - and a sociohistorical change event is, in this case, more plausible than the co-existence of the PNs within a complex SC,
- Then a SCE—consisting of either *division* or *integration* of communicative relations—is reconstructed.

3.4.3. Sequencing PEs

In section 3.3 it was argued that the CM alone cannot guarantee the chronology, or contemporaneity, of reconstructed changes. Further criteria are necessarily applied to the results of comparative reconstruction in order to sequence the reconstructed innovations. This section outlines three types of criteria—linguistic, textual and sociohistorical—which provide principled reasons for reconstructing the chronology of innovations. They are supplementary to the CM, but not optional for the reconstruction of linguistic history in a dialect continuum.

3.4.3.1. Linguistic seriation

Linguistic seriation is a term coined (as far as I am aware) by Anttila (1972) to refer to the sequencing of changes on the basis of linguistic criteria. Such criteria include the diachronic dependency of innovations, for instance:

When the output of one change is the input of another, we can establish *relative chronology* between them (Anttila 1972: 109).

Alternatively the criteria may not be *necessary* diachronic dependency, but *plausible* diachronic dependency—proposed on the basis of diachronic linguistic typology (Koch 1996). From the mass of studies of various linguistic histories we learn that certain changes—whether phonological, morphological, semantic, or syntactic—commonly proceed incrementally, and in a certain order. For example, if the correspondences for lect A support reconstructing change $*s > \emptyset$, while the correspondences for lect B support instead $*s > h$, it is plausible to assume on linguistic criteria (i.e. linguistic seriation) that $*s > *h$ was common to both lects, with $*h > \emptyset$ a linguistically natural incremental extension in lect A of the first change (see further Anttila 1989: §14.6). Anttila also uses linguistic seriation to sequence internally reconstructed changes (1989: §19.8-10). Linguistic seriation can only be used to establish relative chronology of changes, and not absolute chronology.

3.4.3.2. Textual sequencing

Use of historical texts for linguistic reconstruction is not without its problems in Indo-Aryan (or elsewhere for that matter). Some comments have already been made regarding these problems in section 1.1. Nonetheless, not all texts in the historical literature of Indo-Aryan are equally problematic. Those texts that aim to produce something closer to the vernacular of the time—usually prose rather than poetry—may, with some caution, be used to sequence innovative features. In general the following principle should be followed when assigning chronology of innovations based on textual evidence: assume that the text is at least partially archaic and that the vernaculars of the time are more progressive in the use of innovative features than the attested written language. The implication of this interpretive principle is that the presence of an innovative feature in an historical text is good evidence that the feature had occurred in some lect at the time of writing. The interpretation should, however, be asymmetric. If an innovative feature is absent from an historical text, this is not necessarily evidence that the innovation had *not* occurred in the vernaculars of the day. It is entirely plausible that the written norms lagged behind the spoken norms of the day.

Further problems associated with using historical documents to sequence linguistic changes are (1) establishing the chronology of the document in the first place—this is often done on the basis of references to historical events, as well as analysis of the style of script used—and (2) establishing the language in which the document was written. This is a notorious problem for the documents written during early NIA. Assigning chronology to innovations based on documents whose ancestry and identity is controversial should be avoided. However, where the ancestry and identity is more accepted, textual evidence may contribute significantly to sequencing changes in linguistic history.

3.4.3.3. Sociohistorical sequencing of innovations

A third set of criteria for sequencing PEs is sociohistorical in nature. As discussed in section 3.4.2, a disjunction in range between different PEs may be the result of a change in SC structure. We have seen that for changes in SC structure to be reconstructible from PEs, the sequencing of the PEs must first be known. However, it is also possible to *reverse* the direction of sociohistorical reconstruction and use social history to sequence PEs. The shape of the historical argument is as follows:

If PNs are reconstructed with a disjunction in their ranges,

And a SCE is, on balance, more sociohistorically plausible than the co-existence of these PNs within a complex SC,

And a particular directionality of SCE (i.e. either SC division or integration) is more plausible for sociohistorical reasons,

Then this plausible directionality of the SCE also supports a particular sequencing of the PEs.

The sociohistorical plausibility of a particular directionality to the SCE may come from attested or hypothetical sociohistorical scenarios. Thus this method can be used both in areas with documented social history, and in areas without such documentation. The sociohistorical method of reconstruction is applied to the linguistic history of KRNB in Chapter 7—with good results.

A quick caveat regarding hypothetical sociohistorical scenarios: these can be used (a) to justify the diagnosis of a PE (3.4.1.3), and as just stated, (b) to justify a particular sequencing of PEs. However, if hypothetical, unattested sociohistorical entities are used to establish both (a) diagnosis and (b) chronology of a PE, then the reconstruction is less historically reliable and more a matter of guesswork as a result. The reconstruction becomes more historically reliable only when either chronology or diagnosis of PEs is established by non-hypothetical criteria: either linguistic (Diagnostics #1 and #2, and linguistic seriation), textual sequencing, or *attested* social history.

The use of social history as a means of establishing the chronology of linguistic changes is not entirely new to historical linguistics. Inferences of this kind can be found in several studies but the methodology for developing these inferences has nowhere, that I know of, been made explicit and proceduralised. Geraghty (1983) cites Pawley and Sayaba (1971) as employing this approach:

Combining their analysis of the linguistic situation with archaeological and topographical considerations, Pawley and Sayaba suggested that most of the favourable coastal regions of all the main islands of Fiji had been settled by 1,000 B.C. (Geraghty 1983: 351)

In this case, the archaeological considerations attest ancient SCEs, and provide justification for *dating* those SCEs. Topographical considerations on the other hand, suggest hypothetical sociohistorical scenarios which can be used to argue for a plausible directionality of SCEs:

The coastal regions of Viti Levu and Vanua Levu [of Fiji], and the smaller islands, are all fairly readily accessible to each other by sea. The only really effective barriers to movement in Fiji are the mountain ranges ... Once a sizeable proportion of the Viti Levu population moved inland up the main river valleys [as a result of decreasing reliance on maritime resources and/or overpopulation in coastal areas], the central mountain chain would have neatly divided the inland population into two. (Pawley & Sayaba 1971: 433, cited in Geraghty 1983: 351)

In the European context, data from cultural history (cultural centres, diocesan boundaries and the like) have been correlated with the ranges of reconstructed innovations in Bloomfield (1935) and Lehmann (1992). Sociohistorical events

provide warrant for dating PEs which stopped at the Benrath line to be post-13th century AD changes (Lehmann 1992: 127f), and PEs which stopped at the Ürdingen line to be pre-1789 AD changes (Bloomfield 1935: 344-5).

In the course of this study, the following procedure for sequencing linguistic changes has been developed and tested:

- I. Reconstruct the directionality of linguistic changes (e.g. by the CM).
- II. Scrutinise in as much detail as possible the social and geographical ranges of the linguistic innovations established under step I.
- III. Apply the three diagnostics (linguistic complexity, ecological distinctiveness, and sociohistorical plausibility) to the innovations reconstructed under step I to establish PEs in linguistic history.
- IV. Investigate whether the chronology of any PEs that result from step III can be established (a) by linguistic seriation involving *necessary* diachronic dependency or *plausible* diachronic dependency (cf. section 3.4.3.1), or (b) by textual sequencing.
- V. Consider (i) the possible permutations of SCEs (divisions and integrations) which would account for the disjunction in PNs, (ii) the relative sociohistorical plausibility of each possible permutation, and (iii) the relative sociohistorical plausibility of a SCE as against the co-existence of the PNs within a complex SC. Accordingly, reconstruct the chronology of PEs by selecting the most plausible sociohistorical explanation.
- VI. Use the chronologies established by sociohistorical sequencing (step V), as well as linguistic seriation and textual sequencing (step IV) to reconstruct an account of the linguistic history.

There is a parallel between the plausibility considerations involved in linguistic seriation and those involved in sociohistorical sequencing of PEs. In linguistic seriation, the notion of plausibility is informed by “diachronic linguistic typology” (cf. section 3.4.3.1). Analogously, the notion of plausibility in sociohistorical

sequencing of PEs should be informed by a “sociohistorical linguistic typology”. Some steps towards such a typology are taken in section 3.5.

3.4.4. Modelling PEs with phylogenetic tree diagrams

Based on the finding in Southworth (1958) that structurally differentiated systems (Punjabi, Hindi, Bengali and Marathi) can undergo common innovations, Southworth (1964) goes on to tackle the problem of how to depict this kind of phylogenetic history graphically. In the terms of this study, the problem is how to depict phylogenetic relations that result from SC integration as well as those that result from SC division. Southworth provides various diagrams as possible ways to synthesise the descriptive strengths of both the family tree and wave models of language change. His ‘diachronic isogloss map’ is given below, as a model of the history of Panjabi, Hindi, Bengali, and Marathi. Each node in the tree represents a protolanguage. Diagonal and vertical lines show genetic transmission, and enclosed areas indicate ranges of propagation:

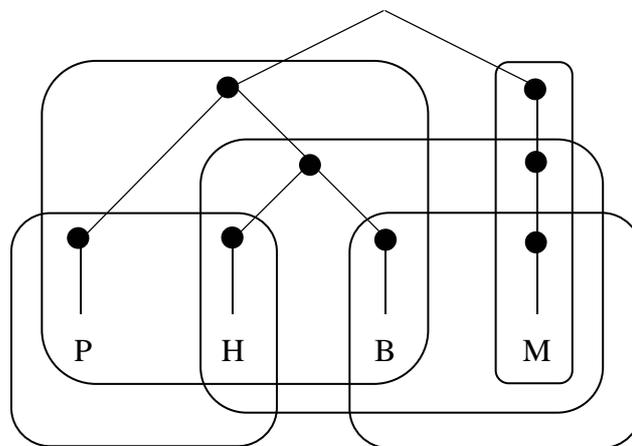


Figure 3-2. Southworth’s ‘diachronic isogloss map’, illustrated for PHBM

This diagram—in particular the overlapping isogloss lines—is quite messy, which may reflect the historical reality, or may indicate a weakness in the diagram. The most concerning characteristic of this model is that certain phylogenetic subgroups are marked by a node in the tree while other phylogenetic subgroups (as I use the term) are not. The node obscures the phylogenetic equality of, for example, subgroups *PHB and *PH.

Ross (1997, 1998) proposes a different reworking of the family tree diagram, by marking recombined phylogenetic relations that result from SC integration with a double horizontal line. In his overall model of language change these double lines also indicate a proto-linkage which defines an innovation-linked subgroup. The convention of using double horizontal lines is adopted here, but in the context of a somewhat different model of linguistic phylogenesis. Given that phylogeny is defined by PEs, these constitute the ‘nodes’ of the phylogenetic tree. However, rather than depict them as nodes *per se*, I will use the double horizontal line—the horizontal extension of the line symbolising the spatial extension of the propagation event. Thus for phylogenetic relations resulting from SC division and SC integration alike, the Propagation-Defined Language is marked with a horizontal line. The model that results from these adjustments of the family tree diagram is illustrated with the phylogenetic relations reconstructed by Southworth (1958, 1964):

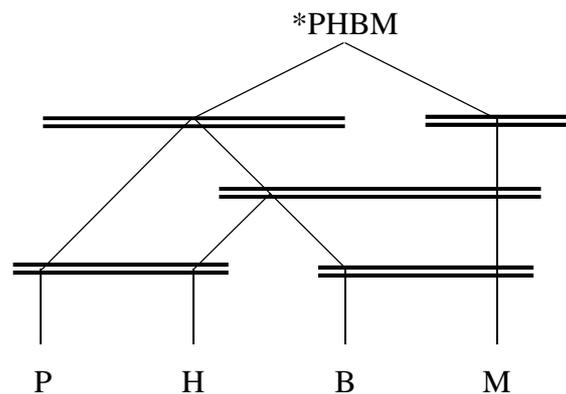


Figure 3-3. Adjusted phylogenetic tree diagram, illustrated for *PHBM (based on Southworth 1958, 1964)

This adjusted phylogenetic tree diagram models relations between PDLs and the PEs that define them. The diagram is not, first and foremost, a model of SCEs. However, if the relative chronologies of the PEs are correctly depicted in Figure 3-3, then it becomes a relatively straightforward matter to infer the directionality of SCEs based on the PEs depicted in the diagram.¹³ Figure 3-3 includes two phylogenetic subgroups which result from SC division: *PHB and *M; and three phylogenetic subgroups

¹³ I am not here claiming that the chronological relations in the diagram are the correct ones for the linguistic histories of Punjabi, Hindi, Bangla and Marathi, but simply showing how, if the chronology of PEs is known, the SCEs may be inferred from the diagram.

which result from SC integration: *HBM, *BM and *PH. Two further conventions are necessary in the application of this diagrammatic schema in the history of KRNB (see Chapter 7). Vertical or diagonal lines with an arrow head are used to show *established chronology*; lines without the arrow head are used to show that the chronology of PEs *has not been resolved*. Relations of diglossia are shown with *broken* double horizontal lines (cf. Figure 7-21), thus contrasting with the solid double horizontal lines of a PE. A broken *single* horizontal arrow is used to indicate the relation between the High and Low lects of a diglossia. For example, in Figure 7-21, a broken single horizontal arrow connects RL and KS (two KRNB lects) with Hindi (the High language of that diglossia).

3.5. Towards a sociohistorical linguistic typology

The sociohistorical sequencing of changes is guided by notions of plausibility which will remain vague unless we attempt to construct a sociohistorical linguistic typology. The role of this typology in reconstruction is analogous to the role played by diachronic linguistic typology in linguistic seriation. The goals of sociohistorical linguistic typology should be to identify (a) sociohistorical criteria which are (probabilistically) diagnostic of a particular SCE, and (b) linguistic and sociohistorical features which (often) accompany each type of SCE and might guide the selection of a ‘most plausible SCE’. Ross (1997) is an important step in the direction of such a typology, and more such work is required—both in contexts with a recorded social history, as well as contexts without it. A thoroughly researched typology is well beyond the scope of this study. Nonetheless, the rest of this section outlines some thoughts in that direction, which should accordingly be taken as only a first approximation (or, perhaps second, after Ross 1997) of a generalised sociohistorical linguistic typology.

A propagation event is diagnostic of two phenomena: communicative interaction and communicative isolation. Interaction enables propagation to succeed, isolation causes it to fail. Isolation leads to isogloss boundaries. Interaction, however, is not the sole factor that conditions the success or failure of propagation. Interaction must be accompanied by *common-identification* for a propagation to succeed. Sociolinguists

(after LePage & Tabouret-Keller 1985) describe language use as involving “an act of identity” whereby “individual users of language strategically deploy varieties and variation to affiliate themselves with groups with which they may from time to time wish to be associated, or conversely, to be distinguished from groups with which they wish no such association” (Mendoza-Denton 2002: 487). Keller’s Maxims of communication include: “talk in such a way that you are recognized as a member of the group” (1994: 100). Mendoza-Denton notes a word of caution, that there exists a “dissonance between automaticity and intentionality” in language use, which has as yet unexplored implications for speech events as acts of identity (*ibid.*: 492). Nonetheless, the point stands that an utterance can have a social value assigned to it, and be used accordingly, even if the speaker is not conscious of the social value at the moment of utterance. Usage of linguistic variants which is automatic, but still identity-conditioned, is explained by the psychological theory of ‘unconscious appraisals’ taken up by Enfield (2003: 9, following LeDoux 1998):

we can, and continually do, make *unconscious appraisals* of the situations we find ourselves in (LeDoux 1998:64-5). Judgements and decisions in linguistic interaction can be made beyond our awareness, and thus may be beyond the reach of introspection.

It is thus theoretically sound, as well as empirically supported, that the propagation of variants in the usage of speakers results from sociolinguistic factors which in turn stem from considerations of speaker *interaction* and *identification*. Conversely, barriers to propagation are the result of:

- 1) an inadequate (frequency or density of) *interaction* with speakers who have adopted the variant, and/or
- 2) an inadequate sense of common *identity* with speakers who have adopted the variant.

The first kind of barrier to propagation is any structure that hinders interaction between mutually identifying people, such as a geographical barrier or a (secondary) social barrier. For example, we might imagine a Bangladeshi Rajbanshi Hindu who wishes to interact with Indian Rajbanshi Hindus on the basis of their shared identity derived from centuries of tradition, but is unable to do so because of the relatively

recent international border that now separates their communities. Similarly, the courses of sufficiently large and fast running rivers in some socio-cultural contexts lead to increased communicative isolation between communities on either side, regardless of their shared sense of historical identity.

The second kind of barrier to propagation is the presence of social divisions in a community. For example, in some areas of KRNB, the local Muslim community has undergone different innovations to the local Hindu community.

The goal of a sociohistorical linguistic typology is to produce general statements of the following abstract kind:

Given sociohistorical conditions S_1 , S_2 , etc., we expect the outcome for the propagation of linguistic variants to be X, rather than Y.

In order to move towards statements of this kind, the discussion of sociolinguistic theory above suggests we start by addressing the question:

What kinds of sociohistorical event might result in a change in the social structuring of (a) interaction patterns, and (b) relationships of identity?

The first category of event, relating to changes in interaction, includes migrations, changes in marriage patterns, changes in a river's course, flooding, outbreak of disease in an area, new technology enabling communication and travel further from home, a bridge to cross a river, clearing of a forest area. Different events will be of greater or less relevance in different parts of the world, and there are certainly many other events that alter interaction patterns across the diversity of human cultures. Any of these events would be expected to have an effect upon potential propagation events by either removing or introducing new barriers or bridges between social networks.

The second category of event, related to changes in identity relationships, would include religious conversion, increased education, urbanisation, change in political situation, nationalisation, any successful social or political movement, or any other change in social identification. Each of these events may either introduce a new social identity, make obsolete an old identity, or change the relative salience of the multiple identities that feature in the lives of speakers.

Other questions that may guide research into the social conditioning of propagation will focus on the sociohistorical reasons for the extent (rather than the limits) of propagation. That is, the reliability of a sociohistorical reconstruction is strengthened by answering the following questions:

- 1) Given an absence of the barriers listed above, what positive evidence is there outside of linguistic history for the presence of social continuities across the range of propagation? For example, what positive evidence apart from common linguistic innovations is there for interaction and identification between speakers of KRNB varieties in Cooch Behar and Rangpur?
- 2) Secondly, if similar boundaries to those associated above with the limits of propagation are found *within* the geographical and social range of a propagation event, what sociohistorical explanation can be given for this apparent contradiction? For example, given that certain rivers have been significant in limiting PEs, why were other rivers not limiting factors?

By identifying the effects of sociohistorical events on propagation, answers to these questions would provide a sociohistorical linguistic typology. Such a typology would then inform and guide the sequencing of linguistic innovations by the procedure formulated in 3.4.3.3.

3.6. Conclusion

By way of concluding this chapter, let us return to the desiderata of section 3.1 and briefly reflect on how this methodological framework satisfies those requirements.

1. reconstruct change events in linguistic history; that is, linguistic innovations.

The change events in linguistic history are construed under this approach as involving (i) linguistic innovations, which are reliably reconstructed by a narrow definition of the CM; and (ii) the propagation events by which the innovation became established usage in a community of speakers.

2. reconstruct the historical sequencing of these change events.

The framework articulated here provides three kinds of criteria for sequencing innovations and propagation events.

3. reconstruct continuous transmission in linguistic history; that is, linguistic inheritance.

Continuous transmission of linguistic material is reconstructed by the narrow definition of the CM. Recurrent correspondences in cognate items are used to reconstruct proto-phonemes which represent a line of continuous transmission of words and morphemes (an etymology) through various stages in linguistic history. The contemporaneity of reconstructed proto-phonemes, as for proto-morphemes and proto-words, is not assumed on the face of it, but is justified by the reconstruction of the chronology of changes.

4. reconstruct the time-depth for continuous transmission of a linguistic feature. This time-depth may be in terms of either ‘absolute’ time, or, more commonly, ‘relative’ to the time-depth of other features.

The time-depth problem is partially answered by the reconstruction of etymologies which are interrupted by sequenced changes. However, where an etymology is not affected by the reconstructed changes, the time-depth of inheritance remains ambiguous.

5. reconstruct the historical relations between contemporary lects. Such relations are based on continuously transmitted material that testifies to a common change event.

Historical relations are defined within this framework by PEs, reconstructed on the basis of diagnostic innovations. The sequencing of PEs is displayed graphically by an adjusted tree diagram which models the phylogenetic relations between compared lects.

6. consequently reconstruct the linguistic material (words, morphemes, phonemes) present at every stage in linguistic history.

This statement represents the ideal end-point—the pinnacle of Everest—which the linguistic historian attempts to conquer. In the case of KRNB the framework developed here has been highly successful in advancing some way up the mountain. Gaps of understanding remain, especially concerning the time-depth of some

inherited features. Nevertheless, this framework has arguably advanced the cause of reconstructing linguistic history in a dialect continuum, as is demonstrated by the reconstruction that follows for KRNB.

