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GRAMMATICAL PREREQUISITES TO PHONOLOGICAL CHANGE?*

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In echoing a well-known title of some thirty-six years ago (Pike 1947), I do not wish to suggest that considerations of meaning and grammatical function have been excluded from the study of diachronic phonology. How to characterize the interface between phonology and morphosyntax across time has stimulated perennial debate, having commanded the attention of several generations of historical linguists from Curtius (1870) and Jespersen (1894) to, most recently, Lass (1980: Ch. 3). With a burgeoning literature on the mechanisms of syntactic change and the renascent interest in morphology, the issue is once more felt to be acute. Our concern, of course, is no longer with the autonomy of one plane from the other. It would seem uncontroversial to assert that grammar plays SOME role in the course of phonological change-- and vice versa. But how to make sense of this truism remains problematic.

Following some general remarks on the nature of the problem (Part 1), I present in Part 2 a critical assessment of significant approaches to grammatical prerequisites in recent scholarship. I pick up the debate from roughly the end of the classical generative period.[1] Beside providing a convenient point of departure, this particular time represents something of a benchmark. Applications of generative theory to diachrony and, along another front, enquiries into the propagation of sound change (e.g., Weinreich, Labov, and Herzog 1968) had occasioned the revival of an old question: the

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regularity hypothesis. There was already in the late sixties a broad consensus that sound change was not a strictly phonetic affair.[2] A large body of empirical evidence had given credence to the concept of grammatical conditioning (Labov 1967, 1969; Labov, Cohen, Robins, and Lewis 1968; Postal 1968:231-267; King 1969:119-127; Wolfram 1969:57-82; Anttila 1972:77-81).[3] As Labov put it: "No reasonable person can proceed on the older [neogrammarian] assumption" (1972:108). By the onset of the next decade, explanatory strategies were moving away from purely formal criteria (particularly simplification) toward more substantive principles founded on naturalness (e.g., Schane 1972), theories of the sign (Anttila 1972:179-181 et passim), or rehabilitated notions of functionalism (Kiparsky 1971, 1972) and drift (R. Lakoff 1972). In Part 3 I examine the dynamic character of the phonic medium and of grammatical structure. I then explore the logical basis of a grammatical prerequisites hypothesis that follows from the juxtaposition of their properties.

1 The problem

As to their effects on morphosyntax, we have been told that "reductive" phonological innovations frequently entail structural consequences. More specifically, the loss of phonetic material or the neutralization of phonological oppositions may undermine the efficacy of inflectional systems. Sound changes, in the classical neogrammarian view, are purely phonetic processes that are applicable under phonetically definable conditions and are "neither favored nor impeded by the semantic character" of the forms involved (Bloomfield 1933:364). Apparent limitations on phonetic processes are in the main attributable to the concurrent forces of analogy. One will always

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find deviations that correlate with grammatical categories, but only because these same systems are subject to other types of linguistic change (cf. Paul 1920:71, Bloomfield, loc. cit.).

By some accounts, when a phonological innovation threatens oppositions that are of communicative importance, it is possible for the requirement of intelligibility to hinder its spread. Speakers may at first use the new articulation at the expense of a linguistic distinction. If ambiguity results, they will repeat with more precise enunciation (thereby restoring the original pronunciation) or else find paraphrases, which are more redundant and hence unambiguous. However, paraphrases can become habitual, so that, often enough, the sound change is carried through and the opposition is lost (Sturtevant 1924:52, Hockett 1965:202).

All the same, the posture of morphosyntax in the face of pernicious phonological change is assumed to be therapeutic. Subsequent generations of speakers compensate for potential ambiguities through the analogical restoration of affixal morphology, morphological realignment, or the adoption of analytical devices (word order, function words) to replace the signantia in demise. Although characteristic of older writings, the traditional notion of change is well-represented in modern scholarship. Phonological reduction is still considered an important cause of morphosyntactic change (see especially Vennemann 1975; also Andersen 1980:21, passim; Eliasson 1980:130), even if it is by no means the only one (cf. Harris 1975, 1978).

We have also been told, explicitly, that the diffusion of reductive and neutralizing phonological changes is strongly governed by grammatical factors. Morphosyntax is at the same time prophylactic with

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respect to the erosive effects of phonology. Material that is grammatically important tends to be retained over the long haul (Kiparsky 1971:602-605 and 1972:196, Campbell 1974:89 and 1975:389, Laferriere 1975, Vincent 1978:418ff.). Diachronic restrictions on change have their synchronic counterparts in that phonological rules may be blocked if their output would impair intelligibility (Kiparsky 1972:197; Skousen 1975:99f.; Hooper 1976:15, 104; Linell 1979:181f.).[4] That is, phonological rules should apply to all proper input pieces, irrespective of grammatical identity. But the exigencies of articulation sometimes conflict with the signification of categories. In principle, the situation should be infrequent with low-level rules of phonetic detail over which speakers have little or no conscious control. But the likelihood of such a conflict increases as the change becomes greater and if it has implications for the phonemic inventory or morphological system (cf. Rhodes 1973:535, Vincent 1978:416f.). Resolution may obtain from the imposition of constraints on the integration of an innovation, in keeping with the semiotic priority of morphology and lexicon over phonology (cf. Dressler 1977, 1980).

Two examples have been ubiquitously cited as paradigm cases of grammatically motivated exceptionality. One of these is the loss of final -n in Estonian (Anttila 1972:79-80, Kiparsky 1972:206, Campbell 1974:90 and 1975:390-391, Vincent 1978:420, Van Coetsem et al, to appear). Briefly, this segment is preserved in Northern Estonian if it marks the first person singular in verbs, thus: kanna+n > kannan 'I carry' but gen. sg. kanna+n > kanna 'of a heel'. It has been suggested that the retention of this segment represents a desire to avoid homophony with the imperative kanna. In Southern Estonian the -n is lost in the

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first person singular as well. But in these dialects the imperative terminates with a glottal stop (kannaq). The possibility of coalescence does not arise. The second stock example is the Greek reduction and loss of intervocalic [s] ([s] > [h] > ∅), save for in certain aorist and future verb forms: trépō 'I turn' : future trépsō beside stéllō 'I send' : steléō < *stelésō; ménō 'I remain' : menéō < *menésō. Bloomfield (1933:362-364) attributed aberrant forms such as lúo 'I loosen' : lúsō to the analogical reintroduction of [-s-] on the model of the post-consonantal allomorph. But contemporary scholars have reinterpreted this situation as a case of "grammatical conditioning." The [-s-] could be lost in liquid and nasal stems, since -e- was available to assume the function of signaling the future. Loss of [-s-] in lúsō would have removed a crucial grammatical mark and led to formal identity between the categories 'future' and 'present' (King 1969:125f., Anttila 1972:98-99, Campbell 1974:90-92 and 1975:389-390, Scott 1975:5, Vincent 1978:418f., Itkonen 1982:106).

Recognition of functional conditions on sound change resurrects two basic, largely unresolved issues involving the interrelation between grammar and phonology in its diachronic aspect. a) To what extent do grammatical and phonological structures "readjust" one another over time? b) If analyses like the foregoing are to be accepted as explanatory, it should be the case that reduction and neutralization are subject to specific grammatical prerequisites. Can these prerequisites be rendered precise, and if so, should it not be possible to predict the course of such changes?

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2 Grammatical prerequisites in the literature

It is worth recalling that the strongly antineogrammarian stance taken by many European writers (especially of the Prague School) fostered an ongoing controversy as to what were the grammatical prerequisites to phonological change, if there were any at all. In this debate there arose a "functionalist" perspective on sound change, to the effect that languages tend to rid themselves of the superfluous and preserve the necessary. Wilhelm Horn, in particular, espoused this view in a widely read monograph: "Die Entwicklung des Sprachkörpers ist abhängig von der ihm innewohnenden Funktion. Teile der Rede, die unter sonst gleichen Bedingungen stehen, können verschieden behandelt werden, wenn sie Funktionen von verschiedener Wichtigkeit haben" (1921:135). Jakobson sought to replace the prevailing mechanistic view of linguistic change with a teleological one: maintenance and restoration of equilibrium in the system (1928 [1962:1-2]). Stressing the unity of the linguistic sign, he asserted that phonological development must be considered in the context of the system and as partly determined by that system (loc. cit., 1949: 6). There could be no doubt that phonemic changes affect the grammatical pattern and that the loss of suffixes through sound change is a frequent event (1949: 14 - 16). But on the other hand, a "mere sound change" is not enough to bring about a grammatical upset: "A phonemic impetus can contribute to the loss of a grammatical category only if in the given grammatical pattern a tendency for such a shift is already present" (1949:16). Martinet (1952, 1953, 1955) advanced yet another version of the functionalist position. The distinctive role played by a phonemic opposition ("functional load") is one of

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the factors that determine its preservation or elimination.[5]

When reading the contemporary literature on language change, one is struck by the advocacy of functional principles already known to yield uncertain results. Anttila (1977:87f.) has pointed out that the "generative revolution" in historical linguistics was rather selective in its attack on tradition. With respect to sound change, opposition was targeted squarely on neogrammarian practice (strict phonetic conditioning). Functional points of view elicited comparatively little attention.[6] Indeed, limitations of sound change had not received systematic treatment in North America, although one can find considerable incidental discussion. Sapir affirmed the traditional view that phonetic processes may eventually "color or transform" large reaches of the morphology of a language (1921:185, 201, 204). He termed "unfortunate" the tendency to isolate phonology and grammar as mutually irrelevant spheres. "There are," he wrote, "likely to be fundamental relations between them and their respective histories" (196f.). The conceptual sphere may well exercise a furthering or retarding influence on phonetic drift (197). A basic "strand" of sound change is a "preservative tendency" that sets in when the main phonetic drift poses a too serious morphological disruption (200). Hockett (1965:202f.) was even more circumspect. He acknowledged that nothing requires that sound change must be carried through; obviously there are some very broad constraints. However, he gave no indication as to what these constraints might be. Hoenigswald (1959:576) warned of the circularity of the functional argument (a point not lost on King 1969:124), but it is clear that this route was not a well-traveled one in North America.

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Classical generative approaches to historical linguistics explicated change in terms of the notational conventions that described it and an evaluation measure predicated on formal simplicity. Non-phonetic features represented a formal parameter to which phonological rules could have access, as needed. When it became clear that formal explanations were inadequate, the deficiency was to be cured through supplementation by more informative "substantive" (extraformal) properties. The general character of these properties, and of the grammatical prerequisites that they implied, evidently seemed intuitively sound, even if as yet ill-defined. Kiparsky (1972:189) gives the impression that the matter had merely been shelved until the study of the formal aspects of phonological systems had progressed to a point where functional considerations might profitably be reintroduced. Against this backdrop, one is not surprised that historical linguistics took up anew the seemingly moot questions given in Part 1.[7]

Discussion of grammatical prerequisites has focused on the semantic load borne by inflectional morphemes. Kiparsky (1972:196-206) worked out a scheme which explicates grammatical prerequisites in terms of "distinctness" and "levelling" conditions. He argued that inflectional categories fall into a strength hierarchy according to their inherent communicative importance. "Weak" morphemes register relatively redundant information and are for that reason more easily lost. "Strong" categories bear a heavier semantic load and are more resistant to loss. The former class includes grammatical cases and verb agreement in languages which have obligatory subject pronouns (English, German). The latter includes number, tense, verb agreement in languages which have omissible subject pronouns, and possibly

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gender. Among the examples Kiparsky cited is the apocope of final -e in German. The plural ending in -e in die Tore is not subject to deletion, whereas the phonologically identical dative singular is normally dropped in dem Tor(e). In some dialects (Kiparsky's examples are from Mecklenburg) the apocope does extend into the plural, but only in forms in which loss would not result in identity between singular and plural, where neither umlaut (gast : gest) nor lenition (brêf : brêv) are available to take up the slack (spēr : spēre and not *spēr).

There are no doubt many examples in the literature that would suggest a correlation between syncretism and the relative predictability of semantic content, distinctiveness, and the availability of simultaneous encoding devices; see in this regard Teleman 1975:698-701, Eliasson 1980:130-131, Plank 1980. From Linell (1979:181) we learn that the vowel of the definite plural morpheme -en in Swedish neutral nouns like låren 'the thighs' or karen 'the tubs' may not be syncopated, whereas the vowel of the otherwise identical nonneutral singular definite morpheme may be, as in kar'n for karlen 'the fellow', lår'n for låren 'the packing case'. An explicit enumeration of these correlations would seem to require the admission of not just semantic content but of lexical category. Dressler (1972:47-69) described how Breton vowel reduction and elision fail to apply to major category items ("Vollwörter") in fast speech but apply freely to infinitival and participial endings, to conjunctions, pronouns, sentential adverbs, and articles ("Formwörter").[8] In a later publication he suggested that all instances of inflectional endings being obliterated by sound change go back to casual speech generalizations of lenition processes (1980: 62ff.). Weakening applies earlier and more often to grammatical

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morphemes than to lexical items. Inflections become increasingly redundant as a speaker shifts to more casual styles. Phonetic material conveying highly redundant information commands diminished articulatory care and is particularly susceptible to reduction. Syncretism resulting from these processes may then be transferred to the formal styles.

Viewed in a teleological context, grammatical prerequisites would appear interpretable as systemic optimization. In morphosyntax optimality is normally understood as one-to-one correspondence between meaning and form. Ideally, every form should have associated with it a consistent and unambiguous meaning or function, while every semantic element in an utterance should have a distinct and recognizable surface realization. This optimal state is known variously in the literature as the principle of "one meaning -- one form" (Anttila 1972:107), "form/meaning biuniqueness" (Ohlander 1976), "transparency" (Langacker 1977:110), and "isomorphism" (Itkonen 1982:90). In principle, the drive toward transparency should minimize cases in which a unit of meaning comes to have no surface realization. Reductive phonological processes should not have the capacity to render a viable morphology disfunctional. The ability of phonological change to obliterate inflectional oppositions implies their supersession by other grammatical means (cf. Koch 1974:101, Plank 1980:290). Whenever a phonological innovation threatens to eliminate important morphological distinctions, transparency should motivate the salutary intervention of "grammatical conditioning" (Campbell 1975:391). By the same token, purposeless variety tends to be reduced (Anttila 1972:181). Languages have a tendency to eliminate form units with no obvious meaning or function, thereby enhancing transparency

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(cf. Langacker 1977:110). Phonetic decay should be more rapid in elements the content of which is null or highly redundant.

Transparency has also been seen as a guiding factor in the integration of phonological alternations into the morphosyntax. Having achieved their full diffusion, phonological rules become vulnerable to denaturalization (rule inversion, rule telescoping, morphologization). A decline in phonological iconicity (naturalness, phonetic motivation) is accompanied by an increase first in phonological and later morphological indexicality (cf. Dressler 1977, 1980; Roberge 1980). If the allomorphy created by the change is "functional" in the sense that it coincides with major category distinctions, then that allomorphy tends to be maintained. But if the allomorphy is "nonfunctional" to the extent that it cosignals nonmajor category distinctions, or is ill-suited as a sign, there is a strong likelihood that it will be levelled out ("minimization of allomorphy," "paradigm coherence"); cf. Kiparsky 1971:588, 602-606, 1972:206-213; Campbell 1975:399ff.; Laferriere 1975; Dressler 1977.

It remains an open question (at best) whether there exists a hierachy of communicative priorities such that the atrophy of case and agreement markers proceeds in accordance with it. Clearly, there is nothing controversial about the functional need to conserve important morphological contrasts. But cases are legion where sound change appears to have neutralized such distinctions. And when loss does occur in a "strong" category, the deleted material is not always restored analogically. Polysyllabic nouns with long stems ending in -el, -er, -em, -en had dropped the plural termination

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-e by Middle High German times and remain suffixless in the modern language: sg. Engel/pl. Engel, Atem/Atem, Winter/Winter. Note further the retention of uninflected plurals in Yiddish, e.g., sg. briv 'letter', pl. briv (beside Middle High German brief, briewe). One could easily cull many such examples from the historical grammars and handbooks.[9]

There is also something uncontroversial about the susceptibility of functionally extraneous material to phonetic decay. But the fact that a morpheme has become redundant by virtue of morphosyntactic realignment does not inevitably augur its demise through levelling or reduction. Save perhaps for the dropping of -e in the first person singular (e.g., ich habe/ich hab'), such loss has not become widespread in German, where subject pronouns are obligatory. Even demonstrably empty terminations show considerable resilience. Despite deflection and loss of grammatical gender, Afrikaans retains adjective inflection: vestigially in monosyllabic adjectives ('n koue dag 'a cold day', die snaakse boere 'the funny farmers' beside in klein bottels 'in small bottles', die groot huis 'the large house'), consistently in polysyllables (die wonderlike presente 'the wonderful presents', 'n ernstige probleem 'a serious problem').

That languages routinely fail to achieve optimality is, of course, plainly obvious. Proponents of grammatical prerequisites anticipated the objections which this fact implies and considered it sufficient to establish certain diachronic trends or tendencies. Kiparsky felt (1972:195f.) that the reason functionalism failed to get off the ground was for want of precise formulation. He proposed that "a tendency for some condition A to be implemented is for a language meeting condition A to be more highly valued, other things

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being equal, than a language not meeting condition A." Functional conditions, if correct, can be justified by showing that they account for facts about acquisition, change and universals not predicted by formal theories. Campbell (1975:402-404) offered a similar rebuttal to those who would depreciate the usefulness of tendencies and insist on absolute conditions. He claimed to have presented a number of "clincher cases" that necessitate either the recognition of diachronic tendencies or the advocacy of anarchy. If, say, the avoidance of homophony or the principle of maximization of efficiency in the outcome of changes can be shown to exist, then it is for an investigation of the actuation problem to reveal "when, why, and how a language will employ the condition, whether universally or only rarely" (404). To admit of only absolute constraints would, in Campbell's view, beg the actuation question and defeat the very purpose of framing a theory of sound change.

An alternative to this strategy[10] suggested itself in the form of concurrent teleologies within and between components of grammar. Langacker (1977:111) felt that the extent to which languages achieve transparency appears consistent with what we might expect as the compromise resolving competing forces in phonology and morphosyntax. Reduction and assimilation reflect the incessant drive toward ease in the physical production of speech (economy of effort) or the achievement of preferred phonotactic structures (cf. Dressler 1977, Donegan and Stampe 1979:112f., Itkonen 1982:102ff.). The teleology underlying these processes ("weakening," "lenition") has a corresponding teleology with exactly opposite effects. "Fortition" or "strengthening" processes (epenthesis, diphthongization, excrescence)

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have a perceptual motivation and enhance the adequacy of surface forms to convey information to the listener. Langacker (1977:112f.) expressed this dichotomy by distinguishing "signal simplicity" from "perceptual optimality." Transparency conflicts not only with signal simplicity, but also with "code simplicity," which is the tendency to keep the number of discrete form units at manageable levels.[11]

Similarly, Dressler's "polycentric" theory of morphonology holds that phonology, morphology, and lexicon are qualitatively different dimensions. Maximal productivity of phonological rules (optimal phonology), paradigmatic and syntagmatic transparency of morphological rules (optimal morphology), and individualization of meaning in single words and word fields (optimal lexicon) are incompatible with one another and cannot be maintained simultaneously. Language learners must effect compromises between divergent tendencies. Each domain can achieve optimality only to varying degrees. However, morphosyntax lies closer to the communicative and semiotic function of language than do perceptual clarity and ease of articulation. The general tendency of linguistic change is toward transparency and not away from it (ceteris paribus, naturally).

Grammatical prerequisites conceived of as inherent tendencies mitigated by competing principles of optimality will always be easy marks for criticism. Lightfoot (1979:374f., 1981) has emphasized that inventories of diachronic teleologies provide ready explanations of virtually any change, but also run the risk of rendering the theory of change "vacuous and unfalsifiable." Lass (1980:60-94) has written at length on the post hoc and nonpredictive nature of functional explanations. Optimization cannot be predicted; it can

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only be recognized when, given a prior definition, something occurs that can be said to be an optimization. Languages are apparently free not to optimize (35). The functions invoked are devoid of principled support. Almost anything can be an example; almost nothing can be a counterexample (69ff.). In effect (to paraphrase Lass) transparency is important except when some other principle is. Goals must be identifiable independently of the phenomena in which they are manifest. The circularity and inexactness of the functional argument present themselves once more. And the virtual invulnerability of principles of optimality to disconfirmation undermine any grammatical prerequisites that might be adduced from them.

Another approach to grammatical prerequisites emerged with the elaboration of Sapir's notion of "drift" (1921:Ch. 7). The atrophy of inflectional morphemes was construed as a long-term change working toward well-characterized typological goals.

R. Lakoff (1972) maintained that loss of case in Latin coincided with the neutralization of vocalic oppositions and loss of consonants in posttonic syllables. Reductive changes (so her argument runs) could not have transpired with preservation of intelligibility unless prepositions had developed beyond their original functions in Classical Latin. Changes in the case system would not have taken place unless phonological innovations rendered them essential. The two directions of change were simultaneous and mutually interdependent. To speak of a cause-and-effect relationship would be "ridiculous." But if neither change is "caused" by the other, something must have set in motion the change of OV to VO word order and the expanded use of prepositions, thereby unleashing the forces of

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reductive change. Lakoff proposed a metacondition on the way a grammar of a language as a whole will change: "If there is a choice between a rule and a lexical item to produce a surface structure containing independent segments, as opposed to one containing morphologically bound forms, pick the former" (1972:178). It would seem almost gratuitous to mention that Lakoff's metacondition is so unprincipled and obscure as to be incapable of providing any insight into grammatical prerequisites. Lakoff herself was admittedly unable to explicate it except in the most general terms. The incoherence of the metacondition has already been discussed in Vennemann 1975:279-286, Anttila 1977:122f., Harris 1978:160, and Lightfoot 1979:386f., 1981:216; to belabor the point would add nothing new. But in consigning such metaconditions to the realm of "voodoo linguistics,"[12] one would do well not to overlook what is for our purpose the main interest of Lakoff's article; namely, her explicit recognition of the futility of seeking causal relationships between the phonetic erosion of inflections and drifts toward analycity.

Koch (1974), in a more erudite fashion, challenged the traditional view that the fixation of accent on the root syllable in Proto-Germanic and attendant weakening of inflectional syllables led to the demise of the Old English case system, compensatory fixation of word order, and grammaticalization of function words. Rather, the atrophy of inflection is to be attributed to the rise to prominence of SVO word order. She proceeded from Greenberg's (1966) implicational universal that SVO languages typically do not evince rich inflectional systems. Inflections cannot be eroded away if they are still functional or still harmonious with the basic word order typology of the language.

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Some perturbation in Indo-European must have initiated the shift from the SOV order of the parent language. This unspecified event triggered a gradual, but inexorable movement toward typological purity in the daughter dialects. Germanic, Slavic, Romance, Greek, Albanian, and Lithuanian, according to Koch, are presently at various stages in their acquisition of properties associated with the SVO type.

While granting Koch her contention that word order stabilization was instrumental in the collapse of the Old English case system, we note that the explicatory principle here is undercut by the fact that typologically mixed languages do exist and are stable over long periods of time. Lightfoot emphasized that typological shift does not constitute an explanation for the loss of case markings, unless one adopts an "absurdly teleological view." Individuals do not have collective memories such that they "know" that their language is in transition from one type to another. Similarly, Vincent (1978:414) dismissed views that ascribe to language a will of its own-- "a sort of conscious control over its future"-- as untenable.

Another interpretation of drift is presented in Vennemann 1975:288ff. and points to precisely the opposite conclusion on the issue of grammatical prerequisites. The central concept is the "principle of natural serialization," according to which languages tend to serialize operator/operand hierarchies unidirectionally: [operator [operand]] in XV languages, [[operand] operator] in VX languages (where X = verbal complement). The order is thus the same between preposition/postposition and NP, verb and object, main verb and auxiliary, modifier and noun, standard of comparison and comparative adjective, verb and adverb; cf. Vennemann 1974:345. The history of word order syntax of each

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language can be understood to a large extent as a development toward consistent implementation of that principle (1975:288). Languages with uniform and dependable subject/object marking "of a substantive nature" tend to be XV languages; languages without such a subject/object morphology tend to be VX (288). If a language loses its substantive subject/object marking, it changes to VX.

The dominant types of phonological change are neutralizing and reductive (292). Every morphological system is destroyed in time by these changes (293). Communicative exigencies require an unambiguous distinction between subject and object. As a substantive subject/object marking system is eroded by phonological change, word order syntax must react to compensate for ambiguities and perceptual complexities. These arise first in object topicalization (293). If an XV language with an unreliable case morphology topicalizes the object (recall that topics tend to occur early in sentences), the verb shifts to a position following the topic, so as to disambiguate its arguments. Subsequently, it may become fixed in second position, and only then is the subject--and primary topic-- singled out as the NP that immediately precedes the finite verb. Following the change in the XV relation, the order of the other constituents begins to shift in accordance with the principle of natural serialization. Vennemann's claim that sound change is either solely or primarily responsible for setting this cycle into motion represents a spiral return to the traditional conception. Grammatical prerequisites would appear to be a nonissue.

Vennemann's schema of constituent reorganization, principle of natural serialization, and emphasis on the pivotal role of object topicalization immediately came under attack; see Li and Thompson

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1974:210-212, Klein 1975, Itkonen 1982 : 101-104. The arguments will not be evaluated here, as these matters are somewhat peripheral to the central concern of this article. More to the point is the criticism of Harris (1978:160ff.). Citing the progressive elimination of case morphemes in Latin and their replacement by a grammaticalized SVO word order and prepositional phrases, he rejected Vennemann's position on empirical grounds. The transition from postpositions to prepositions antedates the shift of the verb to second position (161; cf. Miller 1975:45). Drift is not invariably reducible to the erosive effects of reduction and neutralization. Itkonen (1982:103) added that Proto-Uralic had SOV order and six cases. Some Ostyak dialects have reduced the case number to three while maintaining the inherited SOV order. On the other hand, Lapp and Finnish have changed to SVO and have continuously increased the number of cases to (respectively) eight (or nine) and fifteen.

Itkonen (1982:101) was rightly skeptical about attempts to reduce drift ("long term teleological change" in his terminology) to the accumulation of short term changes.[13] Such misgivings echo those of Sapir (1921:165f.). Significant changes that take place in a language must exist, at the outset, as individual variations. But it does not follow that the general drift of a language can be understood from an exhaustive descriptive study of these variations alone. In themselves they are random phenomena. Linguistic drift has direction. The drift of a language is constituted by the unconscious selection on the part of its speakers "of those individual variations that are cumulative in some special direction" (1921:166). But one should not infer from this statement that the changes

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embodying the drift are causally connected: one introduces a perturbation, the others trail along. Despite the obvious and necessary interrelation of word order syntax and morphology, to say that deflection is causal to the shift from OV to VO (or vice versa) invites tautology. Changes within the respective components of language cannot be regarded as dependent and derivative, but must be seen as different aspects of a single process. The observed consistencies are most probably variables of parameters of linguistic organization that are as yet poorly understood.

For some writers, the prevailing concern remained the regularity hypothesis. Hock (1976:211-218) provided alternative analyses of the alleged cases of grammatical conditioning in Anttila 1972:77-81 and drew a rather different conclusion. During its propagation, sound change may be grammatically conditioned. If for some reason it is prevented from running its full course, it may wind up to be still grammatically conditioned. However, the implementation of sound change so regularly runs its full course that a "modified" neogrammarian hypothesis (regular sound change cum analogy) still holds true. According to Hock, the latter type of analysis in many cases explains phenomena that a grammatical conditioning analysis can only describe (217).

For natural generative phonology, distinctions drawn between types of rules are crucial. Consequently, it became necessary to specify explicitly the nature of the features to which rules of a given type make reference. Hooper (1976:101-110) proceeded on the assumption that sound changes are always initiated for phonetic reasons and, therefore, in phonetic environments. Drawing on the finding of Labov (1972a) and Chen and Wang (1975), she acknowledged that the implementation of a change may not be completely regular. When an innovation enters a language as an optional or variable rule, it may conflict with established rules,

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especially if its output affects some morphological distinction. Such conflicts cannot go unresolved. As successive generations of speakers attempt to learn the system that governs the application of rules, the new rule stabilizes and becomes obligatory in some environments, inapplicable in others. If the established processes of the language win out over the phonetic motivation of the new rule, then the stabilized version will have exceptions.

It is not clear whether the implicit distinction between conditioning of rules (conditions on the execution of a structural change) and their implementation (phonological, grammatical, and social conditions that, whenever the structural description is matched, determine the frequency of execution) is intended to characterize the grammatical prerequisites issue as inconsequential or leave it up in the air. In any case one finds no explicit clarification of the concepts "conditioning," "motivation," and "environment." No one would seriously dispute the utility of a distinction between "process" and "result"; cf. Vincent 1978:421f. But legislating grammatical features out of rule environments merely shunts their statement to some other domain of grammar.

Our present inability to identify grammatical prerequisites of any kind may lead some readers to regard phonological and morphosyntactic changes as essentially autonomous diachronic processes. Harris (1975, 1978) argued for such a "middle position" between the traditional view that phonetic erosion is the ultimate cause of morphosyntactic change and the more recent view that the latter presupposes the transferral of semantic load to some other structure. There is no evidence to rule out reductive change as the initiator of grammatical change, but there is no reason to accord it special status either. The claim that reductive change can never affect a morpheme bearing semantic load is demonstrably false. (Harris discussed the loss of the French

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plural marker [-s].) Functionless elements may be eliminated, but they need not be. Phonological change can and does create situations where therapeutic reanalysis is necessary to preserve the communicative function of language. But grammatical change can take place quite independently of phonology. Alternate marking strategies emerge over time, while older ones become increasingly unmotivated and irregular. The newer, more motivated patterns may eventually supplant their older rivals in accordance with the universal tendency toward avoidance of purposeless variety (Anttila 1972:181). Naturally, this process is cyclical. Eventually, these newer structures will themselves become liable to the same obsolescence that doomed their predecessors (cf. Van Coetsem, et al., to appear). The loss of redundant phonetic material is entirely unpredictable. Reductive change can indeed efface elements with high semantic load. Once again, the issue is not one of how to specify grammatical prerequisites to phonological change, but whether they exist at all.

Unfortunately, it is not always feasible to isolate causal priorities. It is a fact that German nominal inflections show a long history of apocope and neutralization of posttonic vowel oppositions, leading to formal syncretism between the nominative/accusative singular and the nominative/accusative plural; consider the reflexes of etymological masculine ja-stems (OHG hirti/hirtā, MHG hirte/hirte), neuter ja-stems (OHG kunni/kunni, MHG künne/künne; cf. Go. kuni/kunja), feminine ō-stems (OHG geba/gebā, MHG gebe/gebe), feminine jō-stems (OHG sunt(i)a/sunt(i)ā, MHG sünde/sünde), feminine root nouns (OHG naht/naht, MHG naht/naht), neuter a-stems (OHG wort/wort, MHG wort/wort; cf. Go. waurd/waurda), neuter wa-stems (OHG kneo/kneo, MHG knie/knie; cf. Go. kniu/kniwa).

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It is also a fact that prenominal elements, notably the articles (OHG masc. der/dia, neut. daz/diu; MHG der/die, daz/diu), provided an alternative means of marking number and case. But was the shift of information a gradual response to potentially dysfunctional syncretism implied by neutralization and apocope? Or were the endings "allowed" to atrophy due to a gradual shift in categorial marking procedures? The two forces are closely interrelated, and the development has probably been a process in which each has repeatedly influenced the other.[14] Harris quite correctly took note of the extensive role of chance in linguistic change, which makes predictions of directionality impossible (cf. also Lightfoot 1979:407f., passim). While the later language does move toward restoration of the plural markers (Hirt/Hirten, Sünde/Sünden, Nacht/Nächte, Wort/Worte, etc.), German does not always remedy the loss of overt suffixal morphemes; recall Engel/Engel, Atem/Atem, Winter/Winter. But he explicitly rejected the notion of grammatical prophylaxis in the face of reductive change: "What does seem difficult to countenance is the concept of a potential sound change 'scanning the language', as it were, to see whether elements of high functional load would be affected and then 'deciding' whether or not to 'happen'" (1975:64). Curiously, he gave no clue as to how he would account for apparent cases of "blocking." Perhaps this, too, is entirely fortuitous.

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3 On the specification of grammatical prerequisites

By a long and circuitous route, we have arrived back at our point of departure. Our debate has reached dead center, with the choices being the acceptance of vague notions of teleological change or the advocacy of anarchy. It may well be that the issue of grammatical prerequisites is entirely moot, as Harris's position would seem to imply. But it is also possible that one or more of our original postulates is invalid, in which case the question is incorrectly posed. Any answer is bound to be circular, equivocal, or incoherent.

It must surely be evident to anyone reading the foregoing section that linguists have not attained very high standards of rigor in their investigations of the interdependence between morpho-syntax and phonology. One generally looks in vain for explicit statements on the nature of linguistic function (and disfunction), and due consideration of the instantiation and diffusion of impingent changes. But lest I end this article on such a discouraging note, I want to outline, at least briefly, the logical bases of an hypothesis that I shall treat in detail elsewhere.[15]

If one starts with the methodological premise that grammatical prerequisites are retrievable from the study of the net result of change, the objections of Lass are bound to prevail. I do not think that such an approach is likely to have much chance against the acuity of his arguments. The stalemate becomes clear when we try to account for divergent implementations of parallel phonological developments in related languages or dialects.

Consider for a moment certain link vowel phenomena in German and Dutch. Both languages show the syncopation of short vowels in

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posttonic syllables. The change finds its origins in Middle High German and is widespread already in Early New High German times (OHG mennisco > MHG mensche > NHG Mensch). Of interest here is the elision of the thematic vowel in verb morphology: OHG 3 sg. pres. ind. er lebēt > MHG er lebet > NHG er lebt; similarly, pret. lebte, past part. gelebt < MHG lebete, gelebet. If the verb stem ends in a dental stop, then the thematic vowel is preserved before any inflectional morpheme with -s- or -t(-) as the initial segment: du redest, er redet, ihr redet, ich redete, ich habe geredet; rettest, rettet, rettete, gerettet, and so on. Syncope in this class of verb forms would have allowed a stem-final -t, -d to absorb, wholly or partially, an adjacent suffix. In these circumstances it would seem natural to conclude that preservation of lexemic and desinential identity has inhibited the phonological reduction. Significantly, stems ending in -d or -t which undergo a vowel change in the 2nd and 3rd persons singular, present indicative (due to umlauts induced by the original thematic vowel; cf. OHG -is, -it) lose both the connecting vowel and desinence: gilt (< MHG giltet, OHG giltit), hält (< MHG hältet, OHG heltit), and so on.[16] In such forms the vowel change cues the desinence and would appear to render the latter expendable.

Does the motivation as such remain in view of the coalescence of stem-final consonantism and termination in Dutch (hij redt, redde, heeft gered, etc.) due to syncope? To suggest that German speakers "felt" a need that Dutch speakers did not would merely assert the obvious and skirt the question. One can reasonably presume that the relations in grammatical structure are somehow different in each case. However, this cannot be demonstrated in static comparison.[17]

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The investigation of grammatical prerequisites should be conducted on a different plane. Now the view of the relationship of grammar and phonology envisaged in Part 2 could be called "integrating" (in the terminology of Matthews 1972:247). Accordingly, grammar and phonology form interlocking sections within unified linguistic systems. An innovation enters into the latter component and either rearranges the former (necessitating therapy) or encounters resistance (prophylaxis). Conversely, an innovation in grammar may clear the way for reductive and neutralizing changes in phonology. In both scenarios components are perceived as stable until one must respond to the vicissitudes of its counterpart. But there is an alternative, dynamic view in which the relationship is one of overlapping systems that demarcate and readjust the same phonetic mass. In this sense, "neither the autonomy of the two linguistic aspects means independence, nor does their co-ordinate interdependence imply a lack of autonomy" (Jakobson 1949:14). For the satisfactory discernment of grammatical prerequisites it will be necessary to observe how and at what points autonomous changes in phonology and grammar converge.

Given their relative internal autonomy, pattern mutability in the respective domains should be of a fundamentally different character. It is generally accepted that sound changes take place at a concrete and surface level (cf. Chen and Wang 1975:264-266). Extralinguistic ("intrinsic") variations in the phonetic substance are, in the fullness of time, integrated as language-specific ("extrinsic") gestures (cf. Wang and Fillmore 1961). As far as it goes, this conception represents a firm line of continuity in historical linguistics, having been construed as physical laws, as allophonic drift inherent in the normal

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variability of pronunciation (e.g., Hockett 1965), as rule addition emanating from universal phonetic tendencies (Hooper 1976:86f.), and as the failure on the part of children to suppress innate processes in the same way as their adult models (Stampe 1973, Dressler 1977, Donegan and Stampe 1979). The initial impulse for reductive phonological changes is therefore to be seen in the fluidity of articulation and perception.

Whenever such changes can be observed directly, it is normally the case that phonological innovations are not categorial at their inception. Rather, they exhibit systematic variation which is dependent on stylistic, sociolinguistic, phonological, and/or grammatical variables. Now the reduction of word-final consonant clusters is not an uncommon phenomenon in the languages of the world. It is well-represented in English and Netherlandic dialects (including, of course, Afrikaans). In many varieties of American English final -t and -d are deleted variably after any nonsyllabic: just/jus', act/ac', find/fin', bold/bol', etc.[18] There is additional phonological conditioning as well. Vocalic initials have a strong effect in preserving the clusters. Most varieties do not permit the deletion if the final segment represents the past tense morpheme: past/pas', mist/mis' but not passed/*pass', missed/*miss'. The basis for this resistance would appear to be the avoidance of syncretism. Truncation of the dental suffix would render the preterite indistinguishable from the present tense (Kiparsky 1972:197, Guy 1980:5). Some speakers do drop final -t, -d from irregular verbs that form their preterites with the dental suffix and a vowel change: tell/told, sleep/slept, leave/left, creep/crept, sweep/swept, keep/kept. Reduction of the clusters does not lead to any surface ambiguities, for these verbs have an additional, overt

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sign for the preterite. In the Black English Vernacular the preterite morpheme, too, is deletable, though not as often as other clusters in each phonological environment. In principle, monomorphemic clusters should have a higher probability of reduction than irregular weak verbs, which in turn should have a higher probability than regular weak verbs. Guy (1980:31-33) reported that certain informants in his survey have reanalyzed the stem vowel alternation in irregular weak verbs as apophonic. That is, they have begun to eliminate this class by merging its members with the strong (ablauting) verbs. With this reanalysis, final -t, -d are deleted "preferentially" or are not even present in underlying forms.

The variable nature of phonological innovations is not particularly controversial, and I shall not pursue the subject systematically in this essay. But variable rules do become invariant; reductive innovations do go on to completion. The problem is: how precisely is this accomplished? Labov (1971:183 and elsewhere) wrote that whenever this happens, there is invariably some other structural change to "compensate" for the loss of information involved. As we have already seen, the integrating view of the interrelationship of grammar and phonology yields an answer that is inevitably circular. The only noncircular answer can be negative. When the integration of an optional or variable rule conflicts with established grammatical oppositions, the stronger force prevails. If signification wins out, then the categorial successor to the variable rule will have exceptions. Otherwise, the oppositions in question are doomed, and therapeutic measures ensue (cf. Hooper 1976:101-110).

A dynamic conception of the grammar--phonology interrelationship

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would hold that the integration of reductive change coincides with autonomously motivated indeterminacies in morphosyntax. In some cases impingent phonological changes may be a factor. To illustrate this point let us again consider the diffusion of an innovation common to several related dialects.

A classic problem in comparative Germanic linguistics is the failure of the Indo-European o-stem genitive singular termination *-e/oso to show the expected reflex of Verner's Law: Gothic -is (which could reflect either *-is or *-iz due to final devoicing), Runic -as (for expected *-aR), Old Norse -s (*-r), Old English -es < -æs (*-e), Old Saxon -es (*-e), Old High German -es (*-e).[19] The problem has generated a vast literature, the evaluation of which I have undertaken in a separate publication (Roberge, to appear). Of interest, however, is the explanation offered in Peeters 1969. Accordingly, the exceptionality reflects the need to minimize syncretism in noun declensions, especially in dialects that had not yet transferred the case marking function from inflection to prenominal elements. The Germanic parent language inherited a surface distinction between the nominative and accusative singular in the masculine o-stem declension: Proto-Germanic nom. sg. *dagaz (< *-os by Verner's Law), acc. sg. *dagam (< *-om) 'day'. Nasal deletion (or absorption: *dagam > *daga), apocope (> *dag), and syncope (*dagaz > *dagz) altered the shapes of the signantia but left the inflectional opposition unperturbed (Go. dags : dag; ON dagr : dag). The loss of final *-z in West Germanic dialects meant syncretism between the nominative and accusative: OE nom./acc. sg. dæg, OHG tag, OS dag.

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The loss of posttonic short vowels in early Germanic set up the possibility of syncretism in Scandinavian between the nominative singular and the o-grade variant of the genitive singular (IE *-oso > Pre-Germanic *-asa > *-as > Runic -as, ON -s). If gen. sg. *-s had shifted to *-z along with the nominative, then both case forms would have fallen together as dagr (Runic dagaR). On the other hand, if both nominative and genitive singular had remained *-s, then they would have coalesced as dags (Runic dagas). As it turned out, the segment *-z (> -r) became closely associated with the nominative case (cf. nom. pl. dagar, gen./acc. pl. daga), which precluded the lenition of gen. sg. *-s.

In West Germanic the truncation of final *-z necessitated the preservation of *-s in the genitive singular in order to maintain a minimum number of formal distinctions (three, according to Peeters) in the paradigm. Lenition and subsequent loss of the termination would have meant syncretism with the dative in Old English and Old Saxon: OE dæʒes : dæʒe (< earlier -æs, -æ), OS dages : dage. Significant in this regard is the retention of -s in the nominative/accusative plural in these dialects (OE dagas, OS dagos). Had these morphemes undergone Verner's Law and become lost, the case forms would have fallen together with the genitive plural (OE daga, OS dago). In Old High German the difference in vocalism between the respective terminations was available to express the requisite oppositions: nom./acc. pl. tagā : gen. pl. tago. Prehistoric *-s could therefore merge with *z and disappear without disruption of the case system.

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Now this analysis is in no respect free of objection. For the most part this is due to the fact that, with the evidence available, no firm conclusions are possible. But my study (Roberge, to appear) of the existing data revealed the following facts:

(a) Gothic gives testimony to the applicability of Verner's Law to the genitive singular. Since literary Gothic devoices final spirants, this fact is retrievable only from genitival forms in enclisis. In Matthew 11.3 the adjective anþar (gen. anþaris) 'other, another' occurs with the coordinating particle -uh and shows a voiced spirant: þau anþarizuh beidaima 'or shall we look for another?'. Masculine and neuter pronominal genitives also show a voiced segment in these environments: gen. sg. demonstrative pronoun þis : þizuh, etc.

(b) Comparative evidence points unambiguously to unitary protoforms with */s/ in the masculine/neuter genitive singular. Consider the cognates of þis in the Northwest Germanic dialects: ON þes(s), OE þæs, OS thes, OHG des. Finding no credible evidence in accentuation, competitive alternates, restructuring, or analogy, the presence of -z- in anþarizuh, þizuh, etc. suggests imperviousness not to the effects of Verner's Law but instead to the disassociation of the genitive from /s/.

(c) By all accounts, Germanic did not inherit the phoneme /z/ from Indo-European. Its primary source was the lenis allophone [z_o] (← */s/) generated by Verner's Law and phonologized by the accent shift, e.g., IE *ués- > Go. wisan 'feast', *ués- > Go. wizon 'indulge oneself'. It is conventionally assumed that once the lenited allophones had acceded to phonemic status due to the merger of conditioning environments. This assumption is an artifact of the structuralist doctrine

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embodied in the aphorism "once a phoneme, always a phoneme." It is true that the phones [$\underset{\circ}{\text{þ}}$ $\underset{\circ}{\text{ð}}$ $\underset{\circ}{\text{g}}$ $\underset{\circ}{\text{z}}$] which appeared as conditioned variants of */f þ x s/ contrasted with [f þ x s] under primary accent. But they did not automatically do so finally or medially when the contrast was still neutralized by continued weak accent. For a time following the accent shift, the lenis allophone [$\underset{\circ}{\text{z}}$] was phonemically indeterminate. (Alternatively, Verner's Law remained variable in certain contexts.)

(d) Because of the indeterminacy of the voice contrast between [s : z] in absolute finality, phonologization of the Verner's allophone was gradual and somewhat skewed. For reasons that are evident from the discussion in Part 2, the development of the o-stem genitive singular is not explainable simply in terms of minimization of syncretism, as Peeters contended. But the s-plurals in Old English and Old Saxon make it clear that each dialect treated final [-$\underset{\circ}{\text{z}}$] in its own way.

These facts show that the disposition of weakly accented final [-$\underset{\circ}{\text{z}}$] may be specifically related to concurrent and autonomous shifts and continuities in the grammatical patterns of the Germanic dialects. We have no precise information on the interaction between the diffusion of Verner's Law and subsequent innovations in phonology (syncope, apocope, final z-deletion) or grammar (fixation of word order, levelling of inflections, transferral of primary case marking function to prenominal elements). Standing alone, this example is hardly conclusive. Nevertheless, it does suggest that periods of significant change in phonology are roughly coincident with marked shifts in grammatical structure.

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Let us now turn to the second aspect of the problem before us: Can anything be said of grammatical prerequisites, given the interrelation just posited? In order to address this question, we shall have to consider case histories that are less ancient and better documented.

Each element in a language can be said to have a "value" in the overall grammatical pattern. This value will fall roughly into one of three broad categories. Units with basic, intrinsic (lexical) meanings are cued simultaneously for grammatical category and role by any number of factors: the linear arrangement of units relative to other units, the presence of other units with lexical meaning (quantifiers for number, time adverbials for tense, etc.), modification, augmentation, or suppletion of the basic form of the unit, and so on. A subset of these signals is transitory; another subset is grammaticalized. Speakers use the latter with different lexical units in the same or similar circumstances. Some elements of this subset are charged with the brunt of semantic load. Mel'čuk (1979) and others have referred to these as "means." What is left of this subset, after we have deducted lexical units and grammatical means, is distributional structure or "linear form"; that is, syntagmatic co-occurrence and paradigmatic substitutions which supply no meaning or do so only fortuitously. Of course, even these mechanical structures are very important in language use, for failure to implement them correctly brands one's speech as aberrant. Finally, "diacritics" participate in signification yet have no intrinsic meaning of their own. By definition, phonemes assume this value within the grammatical plane. They serve as figurae (constituent elements) of formal units bearing

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their own meaning and denote "otherness" (cf. Jakobson 1949:8). The concept of distinctiveness (opposition), a hallmark of Praguian phonology, is so widely accepted as to require no further amplification. I would only add that formal units, too, may be valuated as diacritics: Afrikaans die arm man 'the poor [underprivileged] man', arme kêrel 'poor chap', etc.

Incidentally, one may find it desirable to specify these values more narrowly. Andersen (1981), for example, developed a theory of diachronic morphology that proceeds from a distinction between changes in the relations among linguistic signs, whether among signata or signantia (morphological change), or among variants of signantia (morphophonemic change). It would seem, however, that any such specification would have to be predicated on this basic triad.

Just as phonological systems exhibit inherent variability, so too do grammatical systems, though in an additional special way. Natural languages are redundant. Speech occurs in time, and as each element is uttered, the next one becomes correspondingly more predictable. Moreover, the arrangement of form units into larger configurations ensures that there will be simultaneity and overlapping among signals. A hearer need only register a fraction of the elements that make up the utterance in order to comprehend the message. The amount of information conveyed by a particular element is therefore not constant when the system is "in motion" or actual use. Elements properly characterized as means may assume the role of linear form (or, in principle, vice versa) in certain utterances. Variability in grammar lies in the distribution of information across constituents of morphemes and syntactic structures.

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This variability gives rise to indeterminacies of value. Now "indeterminacy" is a notion that has drawn much attention in writings on language change. Lightfoot (1974, 1979) understood it as multiple analysis. Sentences may have more than one syntactic derivation, even though they are not semantically ambiguous.[20] In the same vein Andersen (1981:21, 36) wrote of indeterminacies in the speech data from which language learners infer morphological systems and which provide for alternative resolutions. For us, indeterminacy designates not just multiple analysis but imprecise valuation. Values are not always very fixed for certain elements. Only in static formal languages does indeterminacy cease and structures come to be consistently and fully valuated. Presumably, the guiding principle is that speakers make themselves understood and produce forms that are appropriate to a given register and sociolinguistic context.

A grammatical means may become reanalyzed as linear form without any immediately observable consequences. If an element of linear form becomes indeterminate, it may become disconnected from its proper context and extended hypercorrectly or utilized only sporadically. Labov (1971:181) observed that the third person singular ending -s is very difficult for speakers of the Black English Vernacular to perceive, produce reliably, and comprehend. There are some speakers who show no third singular endings at all (He work), and other individuals who vary widely in the amount of -s they use. There is also a great deal of hypercorrection. The -s appears unpredictably in other persons and numbers (We works there) and even in nonfinite forms (You can gets hurt).

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Integration of reductive phonological innovations should coincide with indeterminacies of value. A variable rule in phonology may efface a grammatical means in any number of occurrences of that morpheme but not introduce any disfunction into the morphosyntax. Fasold (1972:38ff.) took pains to establish the status of the preterite as an underlying tense category in the Black English Vernacular. From his data we may infer that the -ed suffix is stable in its valuation as a grammatical means. It is not, for example, freely varying with zero.[21] If clusters containing the dental preterite are significantly less likely to be simplified than monomorphemic clusters, then reduction is not likely to wipe out either signans or signatum. Indeed, as speakers grow older and acquire more formal styles, the grammatical constraint on the deletion of the dental preterite becomes stronger. In Sanskrit final -ī and -ū are uncombinable (pragṛhya) in word junctions if they implement nominal or verbal dual terminations: masc. i-stem nom./acc. dual munī 'sage' + atra 'there' → muni atra (*munyatra); fem. u-stem nom./acc. dual dhenū 'cow' + iti 'thus' → dhenū iti (*dhenviti); munī + iti → muni iti (munīti); dhenū + upabhṛt 'sacrificial cup' → dhenū upabhṛt (*dhenūpabhṛt). Devocalization and coalescence are incompatible with these means of marking the dual, viz. by lengthening the stem vowel. The Vedic texts indicate that these terminations might well have been subject to the sandhi rules in question, albeit variably. In addition to the expected pragṛhya forms, one finds coalesced terminations as well as environments in which -ī must have contracted with initial ī-, even though the orthography does not indicate this. Since the dual endings are presumably stable in their valuation as grammatical means, coalescence and devocalization never became categorial with respect to

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these morphemes. In Classical Sanskrit sandhi rules have become optional and have lost their original phonetic motivation. By this time, the dual endings are completely pragṛhya.[22]

However, if a variable rule in phonology converges on form units of indeterminate value, then reductive sound change should be abetted. To illustrate this point, I should like to consider the deletion of final -t and -d in Afrikaans. For readers unfamiliar with this case, I shall first review the basic facts.

Afrikaans shows a productive pattern of consonant cluster reduction. Words that have, in the Dutch parent language, an obstruent followed by a syllable-final dental stop regularly appear in Afrikaans with only the first obstruent; thus, Dutch kracht 'power', lucht 'air', macht 'might', post 'mail, post office', ambt 'office, duty', hoofd 'head' appear as krag, lug, pos, amp, hoof. In composition the internal grammatical boundary closes the syllable and bars the occurrence of -t, -d: maghebber 'ruler', lugafdeling 'air compartment', posagent 'postal agent', and so on.[23] However, the etymological stops have by no means disappeared in Afrikaans. They are preserved in plurals (huis/huise 'house' beside gas/gaste 'guest'), adjective inflection (hard/harde 'hard', vas/vaste 'firm'), comparison (hard/harder, lig/ligter 'light, lighter'), and in derivation: present participle (sing/singende 'sing, singing', stig/stigtende 'found, founding'), past participle in attributive position (skok 'shock', die geskokte Amerikaner 'the shocked American'), agentive nominalizations (stigter 'founder'), abstract nominalizations (apart/apartheid, vas/vastheid), and so on. The deletion appears to be fully diffused in Afrikaans. Nativized loan words tend to show the change, viz. produk(te), projek(te),

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effek(te), argitek(te), although one does find several borrowings that preserve a final -t: sist 'cyst', kript 'crypt', trust 'trust', takt 'tact'.

There is general agreement that cluster reduction represents not an Afrikaans innovation but rather the generalization of a Dutch dialect feature at the Cape. It occurs sporadically in the earliest Cape documents, becoming more and more frequent by the eighteenth century. Kloeke (1950:284) fixed the origin of the reduction in the dialects of South Holland and Utrecht and dated its diffusion at the Cape as early as 1662. Van den Berg (1965:24ff.) examined sixteenth century archival materials from these regions and confirmed that the reduction is an inherited feature. Scholtz (1972:2ff.) was more circumspect, but accepted the spirit of Kloeke's proposal in all respects save for the relative chronology. More recently, Snyman (1975, 1979) found this same phenomenon in contemporaneous documents from Batavia, while Stoops (1980) presented documentary evidence of a similar process in sixteenth century Haarlem.

There is agreement, too, that cluster reduction was not categorial in the early Cape speech community (Scholtz 1963:17ff., 1972:5; Lubbe 1977:227f., 1979:133, 1980:57; Conradie 1981a:277, 1981b). In his earlier work Scholtz characterized the reduction as a tendency in seventeenth century Dutch, the phonetic phase of which was not complete at the Cape until roughly 1750. After considering new data nearly a decade later, he still would not accept as a proven fact the hypothesis that reduction had come to stand as an obligatory rule any time before the eighteenth century. Whereas in the Netherlands the deletion of postconsonantal -t, -d was inhibited by the normalizing

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influence of a literary language, it won out at the Cape in the absence of any such upper register (Scholtz, loc. cit.; Snyman 1975). Today, only vestiges of this variability are to be found, to wit: in the numeral ag(t) 'eight' and its derivatives (ag(t)ste 'eighth', ag(t)jarig 'eight years old', ag(t)hoek 'octagon', etc.), in the word maag(d) 'maiden' (perhaps a legacy of acrolectal [High Dutch] die heilige Maagd 'the blessed Virgin'), and in vergenoeg(d) 'contented'.[24]

The straightforwardness of the conventional view belies a number of unresolved questions. If cluster reduction was indeed variable in early Cape Dutch, as appears likely, what would have motivated the suspension of its variable constraints? Generalization didn't just happen of its own accord.[25] It is striking that although the loss of -t occurs very frequently after voiceless obstruents in the modern "volkstaal" of South Holland and Utrecht, it is by no means a firm rule, as it is in Afrikaans. Scholtz (1963:16f.) assumed that the present state of affairs in these provices mirrors that of the seventeenth century, even though the corroborating evidence is admittedly sparse. Why, then, should cluster reduction diffuse fairly rapidly at the Cape while remaining variable on the continent?

The absence of a literary standard at the Cape seems too convenient. Cluster reduction was doubtless widespread throughout the Netherlandic speech community. Snyman (1979) has in fact shown evidence that during the seventeenth and eighteenth centuries, reduction was characteristic of the usage of even the educated middle class, both in the Netherlands and in Batavia. Clearly, one must reckon with the effects of a literary standard-- or lack thereof-- in evaluating the evolution of colonial Netherlandic.

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It has evidently been all too easy to overlook the possibility that certain lects represented at the Cape of Good Hope entailed additional non-phonological tendencies toward change that furthered the integration of deletion.

Next, there is the problem of the loss of -t, -d in verb stems terminating in a liquid or nasal: Dutch 3 sg. kamt, past part. gekamd beside Afrikaans kam, gekam 'comb'. This development is not explainable on purely phonological grounds, for nouns with the same root structure tend to preserve the stop: end/ente 'end, tail', beurt(e) 'innings', eelt(e) 'callus'. The communis opinio is that loss of -t, -d after resonants in verb forms is to be attributed to analogy with the class of verbs that had given up personal inflection through cluster reduction (Dutch 2 sg./pl. je /jullie werkt, 3 sg. hij werkt > Afrikaans jy, julle, hy werk 'work') or absorption of endings earlier in the history of Netherlandic (Dutch ik, je, jullie, hij bijt 'bite'); cf. Scholtz 1972:14; Lubbe 1977:228, 1980:58.

The dentalless finite verbs do not provide a compelling model, for levelling could proceed in the opposite direction as well. Instances of hypercorrect extension of -t do occur in our texts: soo bevestigt ik 'thus I ascertain', ik geeft 'I give', etc.; see Scholtz 1963, 1972:8 for further examples. Analogy might just as easily have restored the -t wherever it had undergone deletion. Scholtz suggested that writers who wanted to bring their language as close as possible to Dutch still wrote -t in verb forms in environments where the phonological system would permit it. They omitted -t in environments in which it would have conflicted with a phonological rule. I would point out that one cannot argue it both ways, saying in effect that

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the standard variety was remote enough to allow the generalization of a nonstandard feature, but still sufficiently influential so as to retard the dropping of -t after resonants.

Finally, Conradie's examination (1981a, 1981b) of several corpora from the period 1712-1854 revealed that there is actually a much greater loss of dental stops in the finite verb forms than in other environments during its variable rule phase. By contrast, cluster reduction occurs in the weak past participle (gewerkt > gewerk) and nonverbal forms (supra) with roughly the same frequency. This finding would be all the more striking if it is true, as Lubbe (1980:57) asserted, that reduction was at the outset applicable just to nonverbal forms and only later encroached on the verb morphology. I suppose one could shrug this off by citing the low semantic load of the -t in the second person, singular and plural, and third person singular; hij loop 'he runs' is no less opaque than hij loopt, given the presence of an obligatory subject pronoun (Lubbe 1977:228). But as I have emphasized throughout this essay, redundancy explains nothing.

Conradie surmised that in addition to the phonological conditions common to all environments, there was probably a concurrent grammatical factor operative among finite verb forms, viz. loss of inflectional oppositions (1981a:278). It is possible that there was a final developmental stage in which the phonological conditions played no role at all (1981b:106). He alluded somewhat vaguely to the position of the finite verb with respect to the subject that determines congruence, but walked away from the significance of his insight. For us, Conradie's diffidence is of less significance than his explicit recognition that cluster reduction was accompanied by autonomous changes in grammar.

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Cluster reduction appears to have coincided with indeterminacies of value in the morphosyntax in the seventeenth century Dutch dialects. Textual sources indicate that the status of the inflectional morpheme -t was not unlike that of 3 sg. -s in the Black English Vernacular. Hypercorrect extensions of the former are attested in continental Dutch writings and are not uncommon in Cape documents (recall soo bevestigt ik, ik geeft). Prior to 1750, verb forms without -t after resonants are relatively infrequent. Examples occur chiefly in Arnoldus Kreuzmann's account book (1713-19). Scholtz found only two first person singular forms with hypercorrect -t in the other materials: ik aanneemt 'accept' (1719) and ik verlangt 'demand' (1749) (Scholtz 1972:14). After 1775, we find deletions of -t after resonants in abundance (e.g., dit hoor mijn ook toe instead of hoort), as well as hypercorrect extensions into the first person (ik komt 'come', verklaart 'declare', woont 'reside'). This desinence must have been very difficult for speakers of non-standard varieties to use correctly. Although its atrophy appears not to have been simultaneous in each phonological environment, its development was doubtless coupled to a common indeterminacy (as linear form).

Neologistic finite forms of doen 'do', staan 'stand', slaan 'beat', gaan 'go', zien 'see' lend further support to the indeterminacy of -t. By approximately 1740, their present tense forms in all three persons, singular and plural, have begun to shift toward a uniform inflection in -t (1 sg. ik staat, etc.); see Scholtz 1972:12-13. At the same time, the inflection of the first person singular in -n (ik doen, ik gaan, etc.), a legacy of seventeenth century Dutch, was never completely suppressed and (perhaps in tandem with the infinitive)

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gave rise to competitive alternates in each person. By modern times, of course, the variability was resolved in favor of -n (ek staan, hy gaan, hulle doen, etc.), although remnants of the -t forms (now rare) have survived. These verbs are of probative value because their paradigmatic dissolution is in no way attributable to any kind of phonological disruption.

I would ascribe the lower rate of cluster reduction in nonverbal forms and their preservation of -t after resonants to the fact that this segment is a figura, not a morpheme. If an indeterminacy existed here, it would lie in the detachment of -t from its etymological value as a constituent element of stems (diacritic). This would have taken place already in the seventeenth century Dutch dialects as a direct consequence of the (variable) innovation in phonology. Hypercorrect extensions such as in siekt for siek 'sick', brieft for brief 'letter' are not uncommon in continental and colonial texts from this period.[26] Unfortunately, the documentary evidence does not permit any firm conclusions. There are no related developments outside of the phonological context in which the indeterminacy would be manifest.

From the modern language we can see quite clearly that dental stops eventually fused with the adjacent suffixes in nonverbal forms and disappeared from underlying representations.[27] The emergence of dentalless forms with the diminutive suffix -ie and the adjectival suffix -ies indicate that such has indeed taken place: kors(te) 'crust' : korsie, wors(te) 'sausage' : worsie, kuns(te) 'trick' : kunsie, drag(te) 'load, burden': draggie 'little bundle', lig(te) 'light' : liggies 'light(ly)'. Some further support comes from doublet plurals and adjectival derivatives with the productive (dentalless) suffixal

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allomorphs: gif 'poison' : gifte/giwwe; drif 'ford, drift' : driwwe 'fords', drifte 'drifts'; sag(te) 'soft' : sagterig/saggerig 'rather soft(ly)'. Perhaps the most telling evidence for such a resegmentation is the extension of -te to the plurals of nouns, the stems of which bear the etymological canonical shape CVs. Lubbe (1980:60) reported that bos(se) 'forest', bus(se) 'bus', jas(se) 'great coat', kies(e) 'molar', lies(e) 'groin', les(se) 'lesson' have variant plural forms with -te: boste, buste, jaste, kieste, lieste, leste. Similarly, noun stems once subject to cluster reduction have developed alternate plural forms in -e; thus, for bars(te) 'crack', kors(te), mark(te) 'market', wors(te), one finds on occasion ahistorical barse, korse, marke, worse. It would seem that resegmentation should presuppose indeterminacy. But conjecture would accomplish nothing.

Turning to nonfinite verb forms, we find that there was a parallel trend toward resegmentation. The Dutch infinitival marker -en displayed two allomorphs: a reduced form /-ə/ and a full form /-ən/, the latter occurring with the affixation of the present participle suffix -d- (e.g., zingend-). The reduced allomorph evidently persisted for a time in Afrikaans. One still finds traces of this allomorph in certain verb forms, e.g., Dutch schrijven 'write' > Afrikaans skryf/skrywe. As a rule, the reduced allomorph was lost: Dutch zingen 'sing', neemen 'take' > Afrikaans sing, neem. The full form fused with the present participle suffix, yielding Afrikaans sing+ende, nem+ende. The infinitive marker has a third allomorph in Dutch, /-n/, which is affixed to monosyllabic verbs such as gaa+n, staa+n, doe+n. In Afrikaans these bimorphic infinitives were reanalyzed as monomorphemic sequences and are used as finite forms (ek gaan, hy gaan, hulle gaan, etc.). Given this ten-

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dency toward resegmentation in the present participle, it is not likely that cluster reduction would have remained variable in the infinitive: Dutch stichten 'found', vluchten 'flee', wachten 'wait, await', barsten 'burst' > Afrikaans stig : stig+tende, vlug : vlug+tende, wag : wag+tende, bars : bars+tende.

Scholtz's original set of archival materials indicated that before 1800 only 11% of all tokens show a loss of -t following a voiceless obstruent in the weak past participle, e.g., gemaak for gemaakt 'made, done'. Not until after the turn of the century does the frequency increase significantly to about 50% (1963:16). After considering newly uncovered data, Scholtz revised his chronology somewhat. From concentrations of t-less past participles in certain writers of the period 1740-1775 he inferred that the reduction must have been widespread already by the beginning of the eighteenth century and pretty much completed by 1750 (1972:7f.). Weak participles terminating in a resonant also lose -d in our early materials (e.g., gehoor for gehoord 'heard', gewoon for gewoond 'accustomed'), albeit sporadically. This loss, too, continues an older Netherlandic tendency. Van den Berg (1965) found instances already in sixteenth century Hollands. Scholtz concluded that this hitherto marginal loss of -d spread fairly rapidly at the Cape in the early decades of the eighteenth century under analogical pressure from weak past participles that were dropping -t due to phonetic causes (1972:24).

It is by no means certain that the deletion of -t was fully diffused in the weak past participle by 1750. This environment appears to have been more resistant to the loss of the dental suffix than the finite verb. Comparing the witness of several corpora,

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Conradie (1981a) found that the frequency of cluster reduction in the past participle is about equal to that in nonverbal forms. The occasional loss of of the -d allomorph following resonants in the sixteenth century is neither phonological nor analogical (cf. Van den Berg 1965). Its omissibility may imply an incipient indeterminacy of value in the parent dialects, although this detail is scarcely reconstructable with any degree of confidence. In any event the loss of -d after resonants in Cape Dutch defies analogical explanation for want of motivation. The dental suffix never disappeared entirely. By modern times, we find a resegmentation that is isomorphic with the distinction between predicative and attributive functions: gestig : gestig+te, kam : gekam+de. That the -t suffix was still viable in the former capacity after 1750--however much on the wane it may have been-- is indicated by occasional extensions into the strong inflection: verloopt 'expired' (1759), gedraagt 'carried' (1770), geneest 'cured' (1775); cf. Scholtz 1972:25.

In view of the great range of variability that must have existed at this time, it is always possible that analogy was indeed somewhat capricious, working in opposite directions on related classes of form units. However, the model for the levelling of the past participle appears to have been the infinitive.[28] By Scholtz's own account, -d apparently remained intact after diphthongs until well into the nineteenth century (1972:24). Aside from the isolated example in Kreuzmann's account book (gearbei for gearbeid 'worked'), our materials contain no instances before 1800. That the infinitive (e.g., arbei, with apocope of the infinitival suffix) provided the 'forme de fondation' is confirmed by doublet participles such as geklaat, gevraat, gejaat for geklaag(t), gevraag(t), and gejaag(t). In addition to the restoration of the den-

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tal suffix, these alternates show the syncopation of intervocalic -g- that is characteristic of infinitives; cf. Afrikaans kla(ag), vra(ag), ja(ag) < Dutch klaagen 'complain', vraagen 'ask', jaagen 'hunt'.

We see, then, that the phonetic loss of -t in the weak past participle is not very far removed-- temporally or developmentally-- from other changes affecting the verb system of Cape Dutch. Indeed, I would contend that the generalization of cluster reduction in this environment is but one aspect of a broader movement toward invariant stems and single exponence with ge-. The formation of the past participle is demonstrably in a state of flux by the middle of the eighteenth century. Scholtz himself dated the merger of strong and weak inflection in the third quarter of the eighteenth century (1963:34, 1972:26). The apocope of -e(n) (= /ə/) in the strong past participle, which is a relatively marginal factor in the earlier Cape documents, is significantly diffuse in materials from 1750 to 1780, e.g., geloop for geloopen 'run', gelaat for gelaaten 'let' (cf. Scholtz 1972:24, Conradie 1981a: 277-279). There is no general phonetic process operating on final /-ə/ in Cape Dutch-- a fact to which Scholtz had called attention in his earlier work (1963:17f., 35).[29] Preservation of this segment in noun plurals (huis, huise), adjective inflection (snaaks, snaakse 'funny'), stems (aarde 'earth'), and in a handful of verbs (skrywe/skryf) attest to the morphological character of its loss in most infinitives and strong participles. At about the same time, a parallel indeterminacy seems to have arisen among apophonic distinctions: gekrijgen beside gekreeg (Dutch krijgen, gekregen, Afrikaans kry, gekry 'get, obtain'). There are even sporadic occurrences of infinitives with the vocalism of the past participle, e.g., schreeven for schrijven 'write'.

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4 Conclusion

Eric Hamp (1974:141) made the remark once that "most instances of really interesting linguistic change involve multiple changes of various sorts." He was right, of course. It is beyond any doubt that the diffusion of reductive processes obtains from the convergence of variability inherent in phonology upon indeterminacies of value inherent in grammar. Grammatical prerequisites to phonological change reside in the stability of inflectional categories and the valuation of form units.

Grammatical prerequisites will be defined more precisely once a number of detailed case histories are in hand. These investigations must be founded on sound philological examination (as in the work of Scholtz) or thorough description of the activity of language use in a speech community (as in the work of Labov). But it is also essential to recognize the insights and failures of previous scholarship, to establish the fundamental parameters of an hypothesis and provide for their empirical justification. It is the latter task, and nothing more, that I have undertaken in this essay.

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NOTES

* This is effectively a working paper, with the loose ends and fluidity of ideas that are attendant to the genre. The author would welcome any comments, criticisms, suggestions, and reactions that readers might care to pass along.

Precursors of this contribution are a paper which was read before the Second Annual Symposium on Historical Linguistics and Philology, Ann Arbor, April 1982, and a somewhat premature talk delivered at the University of Stellenbosch the following November. Much of the research for the present version was done while I was a visiting scholar at Stellenbosch. I should like to thank the members of the Departments of General Linguistics and Afrikaans/Nederlands for their good will and gracious hospitality. I am particularly indebted to R.P Botha and F.A. Ponelis, who gave generously of their time and provided for a rewarding exchange of ideas. I have also profited from discussions with J.G.H. Combrink, M. de Villiers, L.T. du Plessis, A. Jenkinson, R.H. Pheiffer, and J. Roux. To these friends and colleagues, who helped make my sojourn in South Africa a welcome reprieve from the ordinary, my profound thanks.

I should like to add a special word of thanks to C. le Roux, for her understanding and forbearance (I have taken much longer to write this than I promised.)

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1. Melchert (1975) provided a compendious survey of the literature to approximately 1971.

2. By beginning my treatment at this particular point in time I do not overlook the fact that there had been considerable opposition all along to the idea of blind and absolute physical laws. See Melchert 1975.

3. To be sure, the analyses of Postal, King, and Anttila did not go unchallenged; see (respectively) Kiparsky 1973:73-75, Jasanoff 1971:81-82, and Hock 1976:211-218. Our concern here is less with the specifics of their positions than with their acknowledgment of "grammatical conditioning."

I am inclined to avoid the term "grammatical conditioning." As a purely formal notion designating reference to nonphonetic features in rule environments, it is much too imprecise for our purpose here, entailing as it does functional constraints on sound change (supra), sound changes which receive their impetus from grammar (Malkiel 1968, 1976; Rochet 1973; Anttila 1978), analogical projections that minimize allomorphy in a paradigm (of the type Lat. hon$\bar{o}$s : hon$\bar{o}$ris > honor : hon$\bar{o}$ris, as described in Kiparsky 1971 and elsewhere), and the reinterpretation of erstwhile phonological rules in terms of their co-occurring morphological contexts (e.g., Vennemann 1972:189, Robinson 1975:1, Hooper 1976:89). On the difficulties surrounding the concept "conditioning" see Roberge 1980:29ff.

4. It is worth recalling that by the turn of the last decade synchronic investigations had begun to weigh more carefully the non-phonological conditions on phonological rules (e.g., Zwicky 1969, 1970). Of particular interest were such questions as whether exceptions to otherwise productive phonological rules are best characterized by exception features,

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rule order, or global rules (Wilbur 1973), and whether such exceptions involve deeper, morphosyntactic regularities (Hock 1973, Dudas 1974, Kisseberth and Abasheikh 1974, O'Bryan 1974).

5. This relation was a pivotal issue at the Sixth International Congress of Linguists in Paris (1948). Among the questions to which participants were to respond was: "Dans quelles limites et dans quelles conditions l'étude synchronique et l'étude diachronique font-elles apparaître une solidarité et une interdépendance entre la structure phonique et la structure grammaticale d'une langue?" (Lejeune [ed.] 1949:217). The latter publication (217-260) reproduces responses from Bazell, de Groot and Reichling, Grootaers, Hjelmslev, Hoenigswald, Kurylowicz, Martinet, Pisani, and others.

6. See Lass 1980:65f. for further remarks.

7. It should be added that the investigation of the extraformal aspects of sound change did not lead to the universal adoption of functionalism; see infra.

8. Cerrón-Palomino (1974) described similar phenomena in Wanka-Quechua. He suggested that there is a tendency in Quechua for a change to begin affecting suffixes only and then spread to roots.

9. A number of these examples have already been discussed or mentioned in the theoretical literature; cf. Vennemann 1975:294-295; Harris 1975:63-66 and 1978:162ff.; Lass 1980:69n.; Andersen 1980:21f., 35.

10. Lass (1980:66f.) has termed this the "'how else?' strategy."

11. There is also "constructional simplicity," which is the tendency for marked categories and constructions to be replaced by relatively unmarked ones (Langacker 1977:107f.).

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12. I am indebted to Stanley McCray for this coinage.

13. But he stopped short of ruling this out altogether. He also would not exclude the possibility that long term teleological change is a phenomenon sui generis.

14. Sigurd (1964:20) made the same point with respect to the fixation of accent in Germanic and the redistribution of information within words.

15. Inter alia in a monograph in preparation on grammaticalization.

16. Particularly good illustrations are the doublets associated with the verb bersten: du birst/berstest, er birst/berstet.

17. As one would expect, sixteenth century German texts show considerable variation between syncopated and nonsyncopated finite verb forms: zeigete/zeigte, redete/redte, etc. Paul (1920:71) cited this fact to discredit the notion of grammatical constraints on sound change.

18. Cf. Labov 1967, 1971:178-185, 1972a:112-118, 1972b:216-226; Labov, Cohen, Robins, and Lewis 1968; Wolfram 1969:57-82; Fasold 1972:Ch. 2; Guy 1977, 1980; Neu 1980.

19. The combined shift of IE */p t k s/ yielded two sets of allophones: fortis [f þ x s] and lenis [β̞ d̥ g̊ z̥]. The former occurred word-initially and medially or finally if the nearest preceding syllabic had borne primary accent ("Grimm's Law"). The latter occurred in pre-accentual clitics (IE *kom- > PGmc. *ga(m)- > Go. ga-), medially or finally if the nearest preceding syllabic lacked primary accent, and in pronominal forms that bore weak accent in sentences ("Verner's Law").

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20. Indeterminacy might also be construed as "functional ambiguity," such as that in Sanskrit described by Jamison (1976).

21. Citing the findings of Wolfram (1969:95-108) and Labov, Cohen, Robins, and Lewis (1968:129-131), Fasold assumed that the loss of the [-d] allomorph after vowels (He applied [əp^{h}la] for a job) reflects a phonological process of the Black English Vernacular.

22. I have examined this problem in some detail in an unpublished paper (Roberge 1983).

23. I rather assume that the deletion is not operative in composition.

24. The last example is from Lubbe 1980:62. Older dictionaries give doublets for the lexeme 'host': gas(t)heer. The dental variant must now be exceedingly rare, if it is heard at all.

25. It seems a trifle gratuitous to add that integration as a categorial rule meant purposeless variety in the morphology of Afrikaans.

26. C.B. van Haeringen's paper, "Over z.g. 'paragogische' consonanten in het Nederlands" (Nieuwe Taalgids 32), was unavailable to me at this writing.

27. A typical (postclassical) generative analysis of this resegmentation would be "rule inversion"; that is, the tendency to reanalyze the phonological form of the nonderived category as basic. But as long as the reduction was not categorial, there would be no basis for eliminating -t and -d from underlying clusters. In other words, what would have motivated the rule inversion?

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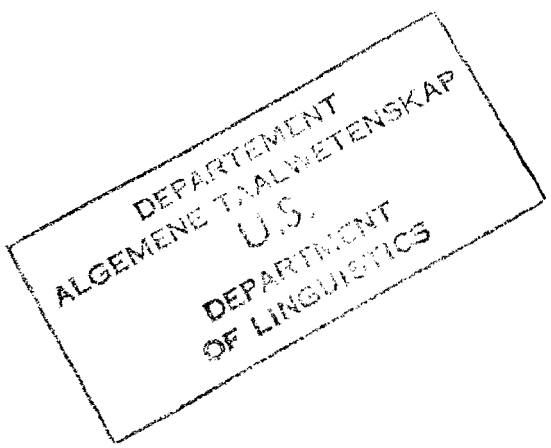
28. Those who are keeping score may recognize this projection as a textbook example of Kuryłowicz's Second Law of Analogy. Naturally, this "law" is itself a tendency. I mention it only en passant and do not invoke it as an explanatory strategy here.

29. I am not sure that every Afrikaans scholar would concur with this assessment. For example, Loubser (1961:248) held that cluster reduction and apocope allowed the present and preterite of weak verbs to become similar in form (3 sg. pres. werkt > werk; 3 sg. pret. werkte > werkt > werk) and contributed to the elimination of the latter from Afrikaans. I regret that I am unable to consider the matter in the present paper.



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