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ONE RULE OR MANY? SANSKRIT REDUPLICATION AS FRAGMENTED AFFIXATION*

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0. Overview

Linguistics, it is well-known, is a heavily comparative discipline. For one thing, the simultaneous comparison of various related languages is universally recognized as an absolute necessity in historical reconstruction. Furthermore, though, crosslinguistic typologizing of diverse unrelated languages is also now increasingly accepted as an indispensable step in elaborating even synchronic grammatical theory. There is thus ample justification for beginning a discussion of Sanskrit reduplication and its broader implications by first citing an Armenian joke and then retelling it with an Indic twist.

A whole humorous literature exists of questions allegedly submitted to Radio Yerevan, which broadcasts from the similarly-named capital of the Armenian Soviet Socialist Republic. These queries invariably receive the response "In principle, yes" or "In principle, no", usually followed, though, by additional comments which have the effect of completely retracting the original answer. For example: Question--"Radio Erevan, is it true that Comrade Ivan Ivanovich won a shiny new Volga automobile in the last drawing of the State lottery?"; Answer--"In principle, yes. But it wasn't Ivan Ivanovich; it was Sergei Sergeyevich; and it wasn't a new Volga, it was an old bicycle; and he didn't win it, it was stolen from him while he was inside buying his ticket." Hence, further, along similar lines: Question--Radio Yerevan, is it true that Sanskrit reduplication involves only a single, straightforward rule whose elegant autosegmental treatment as just a special subtype of affixation supports the crosslinguistic validity of such an approach?"; Answer--"In principle, yes. But Sanskrit reduplication isn't one simple rule; it's a collection of many heterogeneous rules, with varying degrees of complexity; and its resemblance to nonreduplicative affixation isn't confined to overall formal similarity; this also extends to their parallel morpholexical fragmentation, as in numerous other languages; and, finally, Sanskrit reduplication doesn't always involve copying; sometimes it is so prototypically affixal that it isn't really reduplication at all."

The basic conclusions adumbrated above in the foregoing vein can now (with all due sobriety) be reformulated and summarized as follows:

I. Sanskrit reduplication is not a single rule, but a constellation of several distinct rules.
II. These rules are best analyzed as parallel to those for nonreduplicative affixes.

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III. The above analysis is motivated not only by evidence from individual stages of Sanskrit but also by the considerable historical evidence pointing to increased fragmentation of reduplication over time.

IV. Fragmented reduplication--and lexical particularization of morphological rules in general--is not limited to Sanskrit, but appears to be the cross-linguistic norm.

These conclusions are supported by a solid body of general and specific evidence, which we present in the sections below.

1. On Reduplication in General

The overall phenomenon of reduplication has lately been the focus of intense investigation. Building on earlier findings by Wilbur 1971, Moravcsik 1978, and Carrier 1979, recent work by McCarthy 1979, 1981, Marantz 1982, Broselow 1983, Broselow & McCarthy 1983, and numerous others[1], has helped bring this process into the forefront of current research on multilinear phonology and morphology. However, the facts of reduplication in Sanskrit--though well-described and readily available ever since the appearance of Whitney's classic grammar in 1889--have received surprisingly little attention in the aforementioned literature. Similarly, the separate body of contemporary research devoted to Sanskrit linguistics has treated reduplication in that language only tangentially, mainly in connection with discussions of Grassmann's Law and related issues.[2]

——Here, however, Sanskrit reduplication constitutes the central focus. Quite apart from the challenge it presents for language-particular description, this phenomenon bears directly on a number of significant issues in morphological theory. These include: (i) the degree of homogeneity shown by reduplication processes in individual languages, (ii) the characterization of reduplication as affixal or not, (iii) the nature and variety of affixal templates, and (iv) the relative value that grammars should place on semantic specificity as opposed to phonological generality in morphological and lexical rules.

The most important theoretical finding to emerge from this study, however, is that Sanskrit reduplication requires the adoption by morphological theory of a new construct, the rule-constellation. This construct can be defined as a group of formally similar morphological processes sharing at least one characteristic property of form but distinguished by individual formal idiosyncrasies which prevent their being collapsed with one another. This concept is reminiscent, as a formal inverse counterpart, of the functional notion of rule-conspiracy in phonology, and it also recalls the notion of sloppy identity in the syntactico-semantic sphere of anaphora. For Sanskrit, the rule-constellation of reduplication involves several word-formation processes which all indeed have in common a partial

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prefixal template, but each of which additionally requires a unique set of further template-material and segmental prespecifications.

Equally important, though, is the related finding that the rule-constellation of Sanskrit reduplication reveals a preference on the part of speakers for fragmented morphological and even lexical processes--ones which are semantically specific at the expense of phonological generality, rather than phonologically general at the expense of semantic specificity. Since the same preference for morpholexically particularized word-formation rules is exhibited in numerous languages other than Sanskrit, grammars in general must be constructed so as to reflect this preference.

Such conclusions thus provide a kind of back-handed support for the autosegmental-morphological view of reduplication as affixation that is currently in vogue. On purely formal grounds, there can be little disagreement that reduplication--however analyzed--qualifies as an extreme subtype of context-sensitive morphological addition, and hence as affixation. But the prevalent autosegmental justification for such a treatment is that it obviates the need for transformational formalism and so permits an economical and elegant treatment of reduplication which can easily be assimilated to that of straightforward rules of garden-variety (non-reduplicative) affixation. Based on the evidence from Sanskrit, however, it seems that reduplication and nonreduplicative affixation also show a striking similarity to each other precisely in their apparent inelegance. That is, the morpholexical fragmentation of reduplication in Sanskrit and other languages is exactly paralleled by the existence of fragmented morphological rule-constellations clustering around the unquestioned affixes of, again, Sanskrit and other languages. A most convincing piece of evidence for this parallelism is discussed below (§5), in which a Sanskrit reduplication-subrule was reanalyzed as a rule affixing an invariant prefix--certainly the ultimate in the intersection of reduplication, fragmentation, and prototypical affixation.

2. Evidence for the distinctness of the Sanskrit reduplication rules

Reduplication is found in a large number of formations in Sanskrit, within both the nominal and the verbal systems. Attention here is focussed on reduplication in the verbal system, where five categories of stems--present, aorist, perfect, desiderative, and intensive--all show reduplication.[3] If it were the case that all such formations involving reduplication behaved alike with respect to a variety of grammatical phenomena, then one would be justified in speaking of "reduplication in Sanskrit" as if it were a unified process. However, such is not the case, for there are in fact many significant formal differences in the various ways that reduplication manifests itself in the language. Taking note of these differences is the first crucial step in demonstrating that Sanskrit reduplication is indeed a "rule-constellation".

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For example, the prosodic template associated with reduplication formations is most commonly CV-, as the underlined elements in (1) show:[4]

1. ta-tap- (perfect stem of √tap- 'heat')
   vi-vak- (present stem of √vac- 'speak')
   ti-tap- (aorist stem of √tap- 'heat')
   çu-çut-sa- (desiderative stem of √çudh- 'purify')

However, there are several other forms that this template can take. Thus, in addition to the CV- type in (1), there is also (treating long vowels (V:) as VV):

2. a. V-: e.g. u-va:c- (perfect stem of √vac- 'speak'), i-yak-sa- (desiderative of yaj- 'sacrifice' [5]
   b. VV-: e.g. a:v- (perfect stem of √av- 'favor')
   c. VC-: e.g. a:n-amç- (perfect stem of √aç- 'attain'), am-am-a- (aorist stem of √am-'injure'), al-ar- (intensive stem of √r- 'go'), iy-ar- (present stem of √r- 'go')[6]
   d. C VV-: e.g. va:-vac- (intensive stem of √vac- 'speak'), ja:-jval- (intensive stem of √jval- 'burn, flame'), mu:-muc- (aorist stem of √muc- 'release')
   e. CVC-: e.g. bad-badh- (intensive stem of √ba:dh- 'oppress'), dan-dah- (intensive stem of √dah- 'burn')
   f. CVCV-: e.g. dari-dra:- (intensive stem of √dra:- 'run')
   g. CVCVV-: e.g. gani:-gam- (intensive stem of √gam- 'go'), mari:-mar- (intensive stem of √mr- 'die').

Admittedly, some of these shapes are restricted to particular categories; e.g., CVCV(V)- (as in (2e/f)) is found only in the intensive formation. And there are, to be sure, predominant patterns in any given category (e.g. CV- in the perfect, present, and desiderative), and some evidence of regularization of irregular formations, e.g. the Vedic desiderative stem of √yaj- 'sacrifice' i-yak-sa- ---> later yi-yak-sa-. However, the existence of these divergent shapes cannot be discounted, and they cannot be assigned to just one type of category; rather within each verbal grammatical category with reduplication, a number of template shapes are to be found. Thus, the evidence of the variety of prosodic templates used in categories with reduplication supports the notion that reduplication in Sanskrit cannot be viewed as a unitary process with a single template valid for all reduplicative formations.

A second feature which differs in the various reduplicative formations is the feature prespecification for the consonant(s) in the reduplication syllable. The predominant pattern is for these consonants to be [-aspirated, -back], so that a

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velar in the root is reduplicated as a palatal and an aspirated consonant is reduplicated as a nonaspirated consonant. This pattern is illustrated in (3), and note especially (3e) where it is the second consonant that is reduplicated as [-aspirated]:[7]

3. a. ja-gam- (perfect stem of √gam- 'go')
   b. bi-bhed- (perfect stem of √bhid- 'split')
   c. ji-ghra:- (present stem of √ghra:- 'smell')
   d. ji-ga:-sa- (desiderative stem of √ga:- 'go')
   e. bad-badh- (intensive stem of √ba:dh- 'oppress').

However, there are also a few formations in which [+aspirated] and/or [+back] consonants
appear in the reduplication syllable(s). For example, the Vedic subtype of the intensive formation with disyllabic reduplication does not follow the predominant [-aspirated, -back]
pattern seen above in (3):[8]

4. a. gani:-gam- (intensive stem of √gam- 'go')
   b. bhari:-bhr- (intensive stem of √bhr- 'bear')
   c. ghani:-ghan- (intensive stem of √han- 'smite').

Moreover, in later Sanskrit, there is a reduplicative adverbial formation which allows
[+aspirated] consonants in the reduplication element, e.g. ratha:rathi 'chariot against cha- riot' (cf. ratha- 'chariot').[9]

Thus, reduplication syllables do not all reflect a uniform consonantal prespecification in their templates.

Nor is it the case that reduplication syllables follow a uniform template prespecification for vocalism, giving yet another reason for treating the various reduplications in Sanskrit as formally distinct processes. In particular, there is no constant vowel quality or vowel length across all reduplication rules; the examples in (1) through (4) above show a, i, u, a:, u:, and a__i: in the reduplication syllable(s), and other vocalisms are to be found as well:

5. a. bi:-bha:y- (perfect stem of √bhi:- 'fear')[10]
   b. ti:-tap- (aorist stem of √tap- 'heat')
   c. ne-nij- (intensive stem of √nij- 'wash')
   d. bo-bhu:- (intensive stem of √bhu:- 'become')[11]

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Thus, it clearly is not possible to state a single pattern for the vocalism of the reduplication syllable(s) that is valid across all reduplication types in the language. However, each reduplication rule does have one most common, unmarked value (and a variety of marked values) for the length and quality of the "rhyme" of the reduplication syllable, e.g. **i** in the desiderative and present, **i:** in the aorist, a copy of root vowel in perfect, and a heavy reduplicative syllable (e.g. a long vowel or diphthong, though CVC(V(V))- is possible too) in the intensive. The examples in (1) through (5) above illustrate these categorially-based uniformities, as well as some of the marked divergences within each category. Such a situation alone points to at least five distinct reduplication rules for the verbal system, and the marked subvarieties may well give evidence for the need for further fragmentation in the description of reduplication in Sanskrit.

One additional striking difference in the various reduplications lies in the placement of the reduplication syllable. In particular, the reduplication syllable is mostly prefixed, as in all the examples above,[12] but there is a subclass of desideratives and another of aorists (both formed from vowel-initial roots) in which there is internal reduplication, with a -Ci- reduplication syllable being infixed before the final consonant of the root. A few examples of this small but mildly productive class are given in (6):

6. a. e-di-dh-isa- (desiderative stem from √edh- 'thrive')
   b. a:-pi-p-a- (aorist stem from √a:p- 'obtain')
   c. e-di-dh-a- (aorist stem from √edh-, cited only in native grammatical literature)
   d. ar-ji-h-isa- (desiderative stem from √arh- 'deserve', cited only in native grammatical literature).

Certain of these forms, especially those with no change in the reduplicated consonant, e.g. a:pipa-, could even be considered to have reduplicative suffixes (i.e. with an analysis [a:p-ip-a-]), though the clear cases (where there is a change in the reduplicated consonant) seem to have internal placement of the reduplication syllable. While this type probably arose by a reformation of an earlier form with prefixed reduplication (perhaps *id-idh-) to ed-idh- by analogy to the root vocalism[13], this latter form admits of synchronic analysis into a dis- continuous root e...dh- with infixed reduplication (-di-). The fact that this pattern was also extended to other such roots suggests that this is the analysis that (at least some) speakers actually made.

A final difference among the various reduplications in the verbal system of Sanskrit concerns certain root idiosyncrasies associated with reduplication. In particular, five roots show a "reversion" of the root-initial palatal to a velar consonant in various reduplication categories, but this reversion is not found

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uniformly across all the categories for those roots. For example, while the reversion always occurs in the desiderative, it otherwise is scattered across the remaining categories. The following is an (attempt at an) exhaustive listing of the relevant forms, grouped according to root, which show reduplication categories where reversion occurs and, where this can be determined, those where it does not:[14]

7. a. √ci- 'note': ci-ke- (present stem), ci-ki:-sa- (desiderative stem), ci-ka:y- (perfect stem)
   b. √cit- 'perceive': ci-ket- (perfect stem), ci-kit-sa- (desiderative stem), ce-kit- (intensive stem), but, cited by native grammarians: ci:-cit- (aorist stem), ci-cet- (alternative perfect stem)[15]
   c. √ji- 'conquer': ji-ga:y- (perfect stem), ji-gi:-sa- (desiderative stem), but ji:-jay- (aorist stem), je-ji:y- (intensive stem, from native grammarians)
   d. √hi- 'impel': ji-ghy-a- (present stem), ji-ghi:-sa- (desiderative stem, from grammarians), but ji:-hay- (aorist stem, from grammarians)
   e. √han- 'smite': ji:-ghan- (aorist stem), jan-ghan- (intensive stem).[16]

Taken together, then, these facts concerning formal differences in the various manifestations of reduplication in Sanskrit point clearly to the conclusion that it is misleading to speak of reduplication in Sanskrit as if it were a unitary process. Instead, a good many reduplication subrules are needed--for observational as well as for descriptive adequacy.

3. Evidence for the Clustering of the Various Sanskrit Reduplication Rules

Despite the conclusion just drawn from the facts in section 2, there are, nonetheless, some striking ways in which the various reduplication rules are formally similar. These facts constitute the second crucial step in demonstrating that the reduplication rules form a rule-constellation, since they show that the rules have some formal properties in common.

The first such property is a trivial one, but must be mentioned nevertheless. As is clear from the examples in (1) through (7) above, all reduplication templates contain at least a vowel. Moreover, in a fully autosegmental analysis, they would all be marked with the feature [+reduplication].

There are, however, more significant common features. In particular, all reduplication rules show the same regular contrast in the differential copying of root consonantism with initial sibilant (s, ṣ, ś, though this last involves a perhaps somewhat nonstandard use of the term sibilant) clusters. Where the second segment

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in the cluster is a stop, only the stop is copied, i.e. √S(ibilant) + (s)T(op)...- ---> T-vowel-ST...-, but where the second segment is a resonant, the sibilant is copied, i.e. √S + R(esonant)...- ---> S-vowel-SR...-. Examples of the stop-type are given in (8a); examples of the resonant-type, in (8b):

8. a. √sthi:v- 'spew' ---> te-sthi:v-/te-sthi:v- (intensive stems, from grammarians); √stha:- 'stand' ---> ti-stha- (present stem); √sprç- 'touch' ---> pa-sprç- (perfect stem), pi-sprk-sa- (desiderative stem); √stu- 'praise' ---> tu-stav- (aorist stem)

b. √çru- 'hear' ---> çi-çra:v- (perfect stem), çu-çruv- (aorist stem) √smr- 'remember' ---> sa:-smr- (intensive stem), su-smu:r-sa- (desiderative stem), both from grammarians.

This is the one significant formal feature common to all reduplications in Sanskrit without any exceptions. It is important to stress "formal" here, for it is the case that in general, reduplication is not unitary within categories from a functional and/or semantic standpoint. With the exception of the intensives, whose stems always have reduplication of some sort, there are nonreduplicative formations to be found in each of the categories that show reduplication.[17] By its unique commonality to reduplication, this feature gives some unity to what is otherwise, from a formal standpoint, an assortment of numerous different rules. Still, given the rather large number of features on which the reduplication rules disagree, it seems best to conclude that they do indeed form a rule constellation, united primarily in the way they treat sibilant clusters and related in the fact that they all involve at least a vowel prefix, but distinct nonetheless in their behavior with respect to a wide variety of formal aspects.

4. Contrast with Other Analyses with Little or no Recognition of Fragmentation

While Sanskrit reduplication has been mentioned quite extensively in the generative literature (see footnote 2), the view of Sanskrit reduplication taken here is an entirely novel one. One notable exception is Schindler 1976, which talks (p. 627) of the remnants of Grassmann's Law in Sanskrit as "one of several *morphological* rules that apply ... [in] redu- plication".[18] For the most part, previous researchers in the generative framework have either acted as if the reduplication rules in Sanskrit were a unitary process, or as if there were at least unity within categories. Thus, Sag (1976, p. 617) gives "the reduplication rule" as:

9. $[_{ROOT}$ C V X
1 - 2 - 3 - 4 ---> 2 - 3 - 1 - 2 - 4.
<velar> <palatal> -asp etc.

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Similarly, Cairns & Feinstein (1982, p. 210-1), following Kiparsky (1979, p. 434-5) declare that "the Sanskrit [reduplication] rule will have the form: copy Mc " [= margin core of root syllable's onset], and Marantz (1982, p. 448-9n.9) speaks simply of "Sanskrit initial reduplication". Anderson (1982, p. 602), on the other hand, implicitly recognizes categorial differences in reduplication, but nonetheless gives a single rule for "the reduplication in ... ["the perfect stem"]":

10. +Verb
+Perfect
/ < +coronal > -syllabic C_0 (a) [+syllabic] X /
+cont <+obstruent>
1 2 3 4 5 6 =>
/ 2 5 1 2 3 4 5 6 /.

Similarly, Borowsky & Mester (1983, p. 53) refer to the "the formation of the perfect [in Sanskrit] ... by prefixing a template CV- to the root and copying and associating the segmental melody", though recognizing some categorial differences by referring (p. 61n.2) to "[some] intensive forms [which] involve reduplication of the entire root morpheme". To a certain extent, these analysts were simply giving the unmarked or predominant formative process in each case, but such oversimplifications dangerously obscure the actual quite fragmented picture. As noted already (and in the next section), this fragmentation is to be expected, given the affixal nature of reduplication, so the contrast here is not just one of detail but rather one of substance.

5. Parallels Between Reduplicative and Nonreduplicative Sanskrit Affixes

Calling reduplication affixal in nature means treating it as not distinct in any meaningful way from the (nonreduplicative) affixes of the language. This view has been argued for by Marantz 1982 for reduplication in human language in general, and it certainly holds for San- skrit, based on both synchronic and diachronic facts which show that a number of parallels obtain between (undisputed) affixes and reduplication in Sanskrit.

From a synchronic standpoint, there is considerable motivation for treating reduplicative elements as a type of affixation. Most importantly, doing so fills out holes in the distribution of both reduplication and (nonreduplicative) affixation. That is, while there are numerous (nonreduplicative) suffixes in Sanskrit, there is but one grammatical prefix, the past tense marker a- (the so-called "augment", see footnote 12). Similarly, while the placement of the reduplication element is mainly prefixal, one subpattern of the desiderative and aorist subtypes noted above in (6)--namely those forms that show no change in the reduplicated consonant (e.g. a:pip-a-)--admits of analysis as having reduplicative suffixes. Thus by treating

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reduplication as a type of affixation, the one otherwise anomalous grammatical prefix, the augment, ceases to an irregularity, and the one type of anomalous suffixal reduplication likewise is no longer irregular. Moreover, it can be noted that there are both reduplicative infixes, as in the type of (6) with changes in the reduplicated consonant (e.g. e-di-dh-), and nonreduplicative infixes, such as the formative -na-/-n- which forms the present stem of some 29 roots, including those in (11):[19]

11. a. √yuj- 'join- ---> present stem yu-na-j- ("strong")/yu-ñ-j-("weak")
b. √rudh- 'obstruct' ---> present stem ru-na-dh- ("strong")/ru-n-dh- ("weak")
c. √chid- 'cut off' ---> present stem chi-na-d- ("strong")/chi-n-d- ("weak").

In terms of the distribution of their placement with respect to roots, then, an affixal treatment of reduplication serves to eliminate irregularities both in reduplication and in the (undisputed) affixes.

From a diachronic standpoint , though, the evidence is even stronger, for many of the things that have happened to affixes in Sanskrit have also happened to reduplication syllables. This parallel behavior suggests that speakers treated the two alike.

For example, both affixes and reduplication syllables sporadically underwent a loss of their identity due to their reanalysis as part of a root. Thus the synchronic root √pinv- 'fatten' (evident in, for instance, the perfect stem pi-pinv-) represents a reanalysis of an earlier present stem from the root √pi(:)- 'swell, fatten' formed with the often factitive suffix -nu-, i.e. *pi-nu-. Similarly, the originally reduplicated intensive stem ja:-gr- 'wake' was reanalyzed as an indivisible root √ja:gr-, which is evident, for instance, in the 1SG present ja:gr-mi,[20] and in nominal derivatives such as ja:gar-aka- 'waking'.

Another development found with both affixes and reduplications involves the obscuring of original boundaries and distributions, in what may be called accretions and extensions. Typically, these happen by some type of reanalysis. Thus, the locatival adverbial suffix -ta:t, added more or less pleonastically to other adverbials, e.g. pra:k-ta:t 'from the east' (cf. pra:ñc- 'forward, east'), puras-ta:t 'before; in/from the east' (cf. puras 'in front, forward'), was resegmented to -sta:t, presumably in forms such as purasta:t, and then extended to other forms, e.g. upari-sta:t '(from) above' (cf. upari 'above'). Simlarly, the "union"-vowel i/i: was originally part of roots (due to the Indic treatment of Proto-Indo-European root-final laryngeals) but came to be considered part of adjoining suffixes, creating virtual allomorphs of the suffixes, so that the agentive -tr- gained the allomorph -

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itr-, the desiderative -sa- gained the allomorph -isa-, etc. In somewhat parallel fashion, the reduplicative intensive prefix with CVR- shape that regularly occurred only with roots containing a resonant was extended, with an -n- that was originally proper only to roots with a nasal, to other roots, e.g. jan-gah- (intensive of √ga:h- 'plunge', and cf. the alternative intensive stem with no final -C- in reduplication, ja:-ga:h-, cited only in the grammarians). Moreover, at some point in the development of the intensive reduplicative prefixes involving reduplication of the whole root, an i: , of somewhat uncertain origin, accreted onto the reduplicative prefix, giving forms such as bhari:-bhr- (from √bhr- 'bear'), and ultimately becoming part of a disyllabic subpattern for intensives (see also footnote 8).

Most significant, though, for the view advocated here is the fact that, in at least one instance, a reduplication syllable, even though its connection to the root was reasonably transparent, was reanalyzed as an affix: a:n-amç-, the perfect stem of √aç- 'attain', and a:n- añj-, perfect stem of √añj- 'anoint', served, via the identification of the a:n- as merely an affix, as the basis for highly anomalous perfect stems of other roots with initial a- or r-, e.g. a:n-rdh-, perfect stem to √rdh- 'thrive', **a:n-**rh-, perfect stem to √arh- 'deserve', etc. The fact that a reduplication syllable could move so easily to an existence as an affix suggests again that reduplication is in actuality a type of affixation.

Given these facts about the parallel diachronic behavior of reduplication syllables and affixes, and given the synchronic motivation for treating them in parallel fashion, one can legitimately question even calling the phenomenon "reduplication" in all instances. Especially in the case of the **a:n**-rdh-/ **a:n**-rh- type of perfect (cf. above and (6)) and of such irregularities as perfect stem **ja**-bhar- (versus expected and later-occurring ba-bhar-) from √bhr- 'bear', there seems to be no reason to speak of "reduplication" except in order to stress a parallel with other formations in the same category. Thus, some context-sensitive prefixation probably is not reduplication at all. Moreover, if one speaks instead of "affixes" in these and the other cases, then **a:n**-rdh- (etc.) can be said to contain a perfect affix that happens to have no direct formal connection with the root it attaches to, while a more regular formation such as **ta**-tap- contains one that does have such a direct formal connection.

Sanskrit reduplication, then, is not only best treated as a fragmented constellation of re- lated morphological processes, but further, these proceses are best taken as affixal in nature.

6. Diachronic Fragmentation of Morphological Rules in Sanskrit

The rule constellation of Sanskrit reduplication not only is synchronically fragmented but also can be shown to have arisen via the diachronic fragmentation of

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an originally more unitary situation. This conclusion rests on a mass of philological evidence that can only be summarized here.

Sanskrit is unquestionably a historical development of Proto-Indo-European (PIE), and the source of Sanskrit reduplication is ultimately to be sought in this proto-language. Parallels for each of the Sanskrit reduplicated categories are to be found in other Indo-European languages. As a result, the proto-language is standardly reconstructed (as in Meillet 1964) as having virtually all the reduplicated (verbal) categories found in Sanskrit. However, the standard reconstruction (Meillet, pp. 179-182) also shows greater unity within each of these proto-categories with reduplication than is found in Sanskrit; for example the vocalism in the perfect's reduplication syllable is *e, while that for the present is *i, etc. (compare (5)). Similarly, the highly particularized forms such as u-va:c- (as in (2a)), a:n-rdh- (see §5), ja-bhar- (see §5), and others, are not reconstructible as such for PIE. Thus, in the development of Sanskrit from PIE, a diachronic fragmentation of reduplication occurred.

Moreover, Sanskrit is attested over a long enough period of time that it not only has a previous history but also an internal one. And, within Sanskrit, idiosyncratic forms such as u-va:c-, a:n- rdh-, ja-bhar-, etc. can be explained only as particularized replacements for more regular forms: u-va:c- through the lexicalization of a former sound change grown opaque (one deleting *v- before u), a:n-rdh- via reanalysis and analogy (see §5), and ja-bhar- probably via contamination. Furthermore, the fragmentation of the rules for nonreduplicative affixes in Sanskrit (as already noted in §5), can also be shown to be a historical innovation. Thus the Sanskrit-internal evidence of the development of reduplicative and nonreduplicative affixes shows speakers to have exhibited a preference, in many cases, for fragmented morphological rules and processes--i.e. for rule-constellations.

Actually, though, the motivation for this conclusion can be shown to be much stronger and even more compelling, once the perspective is widened to include more languages than just Sanskrit.

7. Morphological Fragmentation as the Crosslinguistic Norm

If the extreme morpholexical particularization of reduplication found in Sanskrit were a completely isolated case, one could perhaps attempt to counter the apparent need for a morphological construct like the rule-constellation by claiming that the Sanskrit phenomenon in question represents merely an accidental and/or highly marked situation. But fragmented reduplication is in fact found in so many languages that any such line of resistance clearly is totally untenable. In every langauge known to us which utilizes reduplication to mark either a single grammatically-central morphological category or else several morphological categories (whether central or

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more peripheral), this functional importance and/or variety is always accompanied by at least some degree of morpholexically-particularized formal fragmentation. Thus, reduplication seems to be a rule-constellation, not only in Sanskrit, but also in Kíhehe (Odden & Odden 1985), Madurese (Stevens 1985), Tagalog (Carrier(-Duncan) 1979, 1984), and many other languages too numerous to discuss or even list here. Furthermore, even in languages where reduplication plays a rather minor role (in terms of functional variety and centrality), there is still usually a considerable amount of formal differentiation, as shown for instance by the contrast in English reduplicative (or at least reduplicativoid) forms such as higgledy-piggledy versus flim-flam versus din-din, etc.

In order both to cement the crosslinguistic validity of this overall point and to stress that it is not always clearly brought out in the literature, the treatment of a particular language can be cited, taken from one of the most influential recent articles on the importance of reduplication for morphological theory (Marantz 1982, pp. 474-475). After first introducing "Tagalog reduplication" as if it were a single general phenomenon, the discussion then mentions that Tagalog really has at least "three different sorts of reduplication". Finally, a footnote reveals that, even though the analysis sometimes proceeds "as if the various reduplication prefixes ... are each single, uniform morphemes ... [--a]ctually, ... each prefix has a variety of uses ... [so that] each must be understood as the morphological form of a set of homophonous morphemes." Here, too, then, the notion of reduplication as a rule-constellation is arguably present, implicitly lurking just below the surface.

Moreover, synchronic and diacharonic fragmentation of nonreduplicative affixation--in fact of morphological processes in general--is also extremely common crosslinguistically. Two straightforward cases from English can be adduced involving adjectival suffixes. The alternation between -al and -ar was once phonologically conditioned, but recent pairs such as line-al/line-ar and famili-al/famili-ar show that the -al/-ar contrast no longer represents allomorphy, but instead two separate nearly-homophonous suffixes clustering as an affixational rule-constellation around the formal core Vowel + Liquid. Likewise, such disparate forms as drink-able, pot-able, comfort-able, and surviv-able (as used of nuclear weapons which are--unfortunately--intended to survive, rather than be survived) demonstrate that there are now several homophonous affixes -able. That is, the different morphosyntactic conditions embodied in their various formal statements prevent them from being collapsed with one another (see also Aronoff 1976). German similarly has a two-element rule-constellation for adjectival suffixes expressing material composition (e.g. Seide/seid-en 'silk'/'silken', with -(e)n, versus Stein/stein-ern 'stone'/'stony', with -ern, where final -n is shared), and at least a three-part rule-constellation for agentive suffixes (e.g. Dien-er 'server, servant' versus Tisch-ler 'table-maker, cabinet-maker' versus Red-ner 'speaker, orator'--where final -er is shared).

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Nor are nonaffixational cases of morphological rule-fragmentation hard to come by. For example, a phonologically rather arbitrary set of tone-substitution processes in Copala Trique (see Janda 1982a, Hollenbach 1984, and references there) performs the three functions of deriving adjectives from nouns, inflecting nouns for possessedness, and inflecting relative clause verbs for continuative aspect. In addition, a subtractive process of final vowel deletion in Rotuman marks the "incomplete phase" (see e.g. Janda 1983b, 1984, and Hoeksema & Janda 1985), but this category turns out to be merely a convenient cover-term for a set of uncollapsible distinctions including indefinite nouns, verbs in the imperfective aspect, emphatic words, and nonfinal elements in a noun phrase. In fact, the same farrago of categories are all arguably sometimes marked by morphological metathesis in Rotuman, too, and a similar process of permutation is involved in a rule-constellation of Clallam (see the references noted above for Rotuman). Surely the most extensive (and hence most fragmented) rule-constellation currently known, though, is instantiated by Modern High German *Umlaut* (see Janda 1982a, 1982b, 1983a), which has been morpholexically particularized so severely that it not only occurs alone in six different rules, but also occurs with thirty distinct phonological shapes of affixes, which themselves represent at least twice that many morphological rules. In total, then, the *Umlaut* constellation demonstrably involves between sixty and seventy morphological rules, most of which share an identical formal core, but some of which are strikingly different in their structural descriptions.

In light of the evidence just presented, it can thus be said, without exaggeration, not only that fragmented reduplication is not limited to Sanskrit, but also that morpholexical fragmentation--of reduplication, of nonreduplicative affixation, and of morphological processes in general--is indeed the crosslinguistic norm, both as a synchronic state and as a diachronic change. Such states and changes must be interpreted to reflect a strong and constant tendency on the part of speakers to particularize (formerly) more general morphological processes as markers of more specific lexical and grammatical categories. That is, given the notion of the morpholexical rule-constellation as a way to express the unity of similar rules even in the face of their formal diversity, what emerges as the dominant and driving force in creating such constellations is the lexico-semantic motivation of speakers: the high value that they seem to place on the unambiguous and even redundant transmission of information about specific meanings as expressed by particular lexical items (mainly morphemes and words) and classes of lexical items. For example, the occurrence of the usual German agentive marker -er is far less revealing about what stem precedes it than that of its co-members in the constellation (its "co-stars") -ner and -ler, precisely because the latter have a much more limited distribution (and also express certain connotations which -er lacks).

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It appears that the morpholexical fragmentation at issue here is fed by three main sources (although a full discussion of such topics must be deferred until a later time and place). First, there is morphologization (and lexicalization) of formerly purely-phonological processes, which often transfers the conditioning for such a process from a single phonological confi- guration to several morphemes which once had something to do with that configuration. In this way, a once-unitary formal operation can become fragmented via its multiple direct association with numerous affixes and/or roots (German *Umlaut* being a notorious case in point). Second, there is accretion by metanalysis, whereby a reanalysis of morpheme boundaries results in the effective addition to an existing morpheme of segments which formerly belonged to another morpheme (as illustrated by the German agentives mentioned above, of which -ner and -ler are the result of accretions to -er based on resegmentation of forms like Rechn-er 'calculator, and Regl-er 'regulator', respectively).

Third and finally, but perhaps most commonly, there is reanalysis of root + affix combinations in such a way that not segments but rather semantic and/or morpho(phono)logical properties of a particular root or roots are reassigned (or jointly assigned) to the affix, which thereby becomes correspondingly fragmented from other instances of the formerly identical affix occurring with different roots. It is apparently in this way that Sanskrit forms such as the aforementioned a:n-rdh- arose: the reanalysis of words like a:n-amç- as having an invariant initial morpheme a:n- rather than a reduplicative affix made available a prefix a:n- which could then be used elsewhere. This mechanism can perhaps be most vividly expressed by the following metaphor: when a given affix is deposited in the bank of the lexicon along with a particular amount of principal contained in a specific root, the account draws semantic and morpho(phono)logical interest mainly on the root or the entire word, but such interest can be taken along when the affix in question is withdrawn for use with another root.

The mechanisms just described as conspiring to produce morphological and lexical fragmentation (i.e. rule-constellations) can be characterized as operating diachronically, but such a characterization by no means absolves linguistic theory of the responsibility to account for such phenomena. In fact, it does just the opposite, given the usual generativist assumption that language change is governed primarily (if not exclusively) by constraints of synchronic grammar. Actually, then, the evidence presented herein regarding speakers' preference for fragmented--that is, morpholexically-particularized, rule-constellational--analyses of reduplication and morphological processes in general requires that grammars be constructed so as to place a premium on morpholexical solutions to linguistic problems. Generative grammar, having--correctly, it seems--made a diachronic bed governed primarily by synchronic principles, is here forced to lie in it: the historical frequency and ubiquity of morpholexical fragmentation leave one little choice but to build not just a place but even a preference for such rule-"mitosis" and the resulting rule-

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constellations into (synchronic) grammatical theory. Moreover, the explanatory potential of such an approach is extraordinarily great, for it promises to cover not only the fragmentation of morphological rules and its associated morphologization of phonological rules, but also "downgrading", the morphologization of syntactic phenomena brought about by such interacting processes as semantic bleaching, cliticization, and clitic-to-affix conversion. Still, limits of space preclude a fuller discussion of such issues at this point, so a number of observations are presented in conclusion regarding general lessons for the elaboration of morphological theory that emerge from this particular study of fragmented reduplication in Sanskrit.

For one thing, there can be no substitute for fine-grained studies of particular instances of a given phenomenon (e.g. reduplication) in a single language (e.g. Sanskrit) as the prime source for revealing insights into the nature of such a crosslinguistically common morphological process (again, as reduplication). Studies which superfically draw only selected "representative" data from a wide range of languages, ignoring exceptional forms as uninteresting and focussing on elegantly-describable forms, simply will not do. They proceed a little like the drunk who dropped his keys in the dark just outside the tavern-door but went looking for them up the street under the lamppost because the light was better there. Actually, they are even less defensible than this, methodologically, because they tend not to take a fair look even for what they seek, but rather to start out with an artificially limited preconception of what they will consider as relevant data. It is not surprising then that reduplication looks crosslinguistically elegant under an autosegmental analysis if in fact the primary data going into such an analysis have been selectively gathered from languages so as to favor straightforward reduplication rules while passing over exceptional and complicated rules of this type.[21]

Next, a related issue, it must be concluded that the attempt to exclude such exceptional and complicated forms from consideration on the grounds that they are somehow "marked" is not only circular but also completely undercut by the fact that fragmented reduplication rules (and rule-constellations in general) are staggeringly comon both across and within languages. When the situation of having many allegedly marked phenomena (like fragmented reduplication) is the unmarked case in languages, then markedness itself is probably best excluded from consideration as an explanatory factor in attempts to account for such fragmentation, or at least needs to be set aside for urgent reevaluation.

Penultimately, the essence of morpholexical particularization of rules as an activity that is lexico-semantically-driven should bring to mind that the study of formal aspects of word-formation does not exhaust the subject-matter of morphology. Rather, even what appear to be purely formal characteristics of word-formation, such as fragmented reduplication in Sanskrit and many other languages, may often turn out to have some lexico-semantic motivation. One should keep in mind here Jakobson's dictum that language without meaning is meaningless.

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Finally, the entire phenomenon of morpholexical rule-fragmentation and rule-constellations bears directly on issues raised by the frequently heard saying (apparently due originally to Meillet (1903-1904, p. 641) that "le langage forme un système ... où tout se tient" ('language forms a system where everything holds together'). Whether implicitly or explicitly, this claim is surprisingly often taken to mean that all aspects of linguistic structure are equally directly and equally closely linked to one another, and this interpretation then results in a principle that those linguistic analyses are always to be preferred which yield a maximum of structural homogeneity and interconnectedness. While laudable in the abstract, such a view tends ultimately to have a Procrustean effect, since it encourages the brute-force ironing out of recalcitrant details within one domain of linguistic analysis on the basis, not of internal considerations, but of fit with other areas of grammar. Moreover, hard evidence against such a practice is available from such research as Ferguson's work on simplified registers like foreigner-talk, which in certain crucial respects appear to be independent of the rest of grammar. As Ferguson (1981, p. 3) boldly put it: "Tout does not se tenir", i.e. though everything in language obviously holds together with something, it is not the case that everything holds together with everything.

Such a conclusion could hardly be more strongly supported by the facts of fragmented Sanskrit reduplication and of crosslinguistic morpholexical particularization in general. As such phenomena evolve, they involve gradual but steady formal and functional development of morphological and lexical rules away from each other, with no apparent regard for anything else in grammar except the expression of lexical and lexical-class semantics (and of grammatical-morphemic notions). In fact, the historical linguistic literature is replete with similar instances where locally motivated changes in grammar led to complexity (and often subsequent change) elsewhere. Given the difficulty which even full-time professional linguists have in keeping the entire grammar of a single language in mind at once, is it actually at all surprising that naive speakers behave as if they are unable to do this? Rather, it seems that their conscious and unconscious dealings with language are severely constrained in scope by a highly limited window determining how much grammatical structure they can consider at one time. At the very least, positing such a limitation seems the appropriate step to take in accounting for fragmentation of reduplication and other morphological processes in Sanskrit and elsewhere. In this way also, such notions as Wittgenstein's family-resemblance and Rosch's prototypes, especially as they have already been brought into linguistics by other scholars, suggest themselves as having much explanatory promise.

An approach like this has a bright future, then, but it also has an estimable past. Although the phenomena of Sanskrit fragmented reduplication led us to the concept and name "rule-constellation" prior to our encountering relevant work by Louis

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Hjelmslev, that linguistic pioneer turns out to have anticipated such a notion in a general way nearly half a century ago, and by way of conclusion, his words on this overall topic are given (in our own translation, from the French of Hjelmslev 1939/1959, p. 114): "The famous maxim according to which tout se tient dans le système d'une langue ['everything holds together in the system of a language'] has frequently been applied in too rigid, too mechanical, and too absolute a fashion. One must keep matters in proper proportion. It is important to recognize that everything holds together, but that everything does not hold together to the same extent, and that alongside interdependencies, there are also purely unilateral dependencies, as well as pure constellations." It is our hope that, in the present study of Sanskrit reduplication as fragmented affixation and of its broader implications, we have given such ideas as those just quoted a concrete enough form so that they not only can receive a principled answer from Radio Yerevan but will also find practical application in the morphological and general-linguistic investigations of other scholars.

FOOTNOTES

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1. Besides unpublished papers, the numerous other works include Yip 1982, Bell 1983, Carrier-Duncan 1984, ter Mors 1984, Everett & Seki 1985, and Odden & Odden 1985.

2. Stemberger 1980 has a review of recent generative literature on this topic; Borowsky & Mester 1983 is the most recent proposal (evaluated in Joseph & Janda (in preparation)).

3. We do, however, refer on occasion to facts about nominal reduplication. We exclude from consideration here more sporadic types of reduplication such as the a:mredita compounds, consisting of a repetition of a word, with loss of accent in the second member, for an "intensive, or a distributive, or a repetitional meaning" (Whitney §1260), e.g. vayám-vayam 'our very selves' (cf. vayám 'we'). Still, clearly any comprehensive treatment of the variety of reduplication rules in Sanskrit would have to take such types into consideration as well.

4. We are admittedly being somewhat eclectic in our choice of examples, taking them from all chronological stages of Sanskrit (e.g. Vedic as well as Classical Sanskrit).

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Our primary source is Whitney (1885, 1889), two of the classic Western grammatical studies of Sanskrit. In part our eclecticism stems from our belief that knowledge of the older language persisted into at least the beginnings of the Classical period (e.g. Vedic forms are noted in Pa:nini's grammar) and so was an area of at least passive competence for many speakers. Also, many patterns we present here as illustrating a certain type can be found in a variety of stages of the language, even if a particular example may be restricted to one period. We have not in general indicated the age of any given form, except where such information is important.

5. This form is Vedic only, later having been reformed to yi-yak-sa-; no Classical desideratives reduplicate only with V-, though perfect stems of that shape are to be found then.

6. These last three forms are from the Vedas and Bra:hmanas only; there appear to be no VC- nonperfects to be found in Classical period.

7. It may be, though, that the lack of aspiration on the d in bad-badh- is the result not of prespecification of [-aspirated] for the entire reduplication syllable, but instead of the independent workings of Bartholomae's Law (giving an intermediate stage {badbhadh-} from underlying /badh-badh-/) and Grassmann's Law (giving the attested form).

8. This pattern is found in later stages of Sanskrit as well, but by Classical times, the predominant [-aspirated, back] prespecification prevails, as in Classical bari:-bhr- (intensive stem of √bhr- 'bear', cf. (4b)) and jari:-hr- (intensive stem of √hr- 'take', cf. (4a, c)). Note also that we are here purposely excluding forms such as the desiderative dhitsa- from √dha:- 'put' (i.e. /dhi-dh-sa-/) which show aspiration probably as a result of analogy and which are synchronically formed--despite their diachronic origin in reduplication--via an internal change process limited to (a subtype of) desideratives--see Sag 1976 and Schindler 1976 for some discussion of these desideratives as well as other such forms with aspiration in the apparent reduplication syllable. However, bringing in such forms could only bolster our claims about the lack of uniformity in consonantal prespecification.

9 That this is not simply a dvandva (copulative) or a:mredita (distributional) compound but instead a true adverbial derivation via reduplication is shown by the fact that there is a fixed pattern of vocalism for the unit--the first element always ends in -a:- and the second element in -i. See footnote 3 above, though, concerning the compound reduplications.

10. The form with the vocalism -i:- is found in the rather late Vedic A:itareya A:ranyaka, with -i- found both earlier and later on.

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11. If surface e/o in Sanskrit are to be treated as underlying diphthongs (i.e. respectively, as ay/aw**,** with consonantal y/w), then (5c, d) may not really illustrate differential vocalism.

12. When the aorist stems are used to form a true past tense, an inflectional prefix a- is added outside of the reduplication syllable, e.g. a-ti:-tap-at 'she heated' (aorist of √tap-). Similarly, lexical prefixes can be added outside of the reduplication syllable.

13. Admittedly, it is quite difficult to know exactly what the expected forms should be, since vowel-initial roots present a rather mixed assortment of reduplications of all types, even at the earliest stages; the pattern of edidhisa- is a likely candidate to have been the model since it is attested somewhat early (in the late Vedic Va:jasaneyi-Samhita:) and since a plausible path of development can be inferred for it. Indeed, the limited spread of the edidhisa- type suggests that this provided for speakers a relatively satisfactory solution to the problems posed by these vowel-initial roots.

14. We omit here one form, the Vedic hapax legomenon jáguri- 'steep (?), leading (?)', not only because of its obscurity, but because of disagreement as to its etymology. Only if it is connected with √jr- 'waste away', as Whitney (1885: 55) believes, does it show reversion. Mayrhofer (1956), however, more plausibly connects it with √gur- 'lift up', citing phonological problems with the √jr- etymology (since √jr- is from Indo-European *g'er-, and the palatal *g' should never yield a Sanskrit [g]). We are also excluding sporadic instances of reversion not connected to reduplication, such as Rig Vedic 3PL middle aorist a-srg-ran from √srj- 'send forth'.

15. The native grammarians divide these forms into two roots, √kit- and √cit-, despite their etymological identity, so that under such an analysis, there is no reversion to speak of, but only parallel formations from parallel roots.

16. If the difficult epic apparent intensive 2SG imperative ji:jahi is a form of √han-, then this would be an example from this root without the reversion.

17. Thus, there are many nonreduplicated present stems (ten classes in all, with reduplicated stems making up only one class, representing 4% of the total--to go by Whitney's statistics) and aorist stems (seven formations in all, of which reduplicated stems make up only one type, representing 21% of the total--again based on Whitney's statistics), a subclass of desideratives without reduplication (see footnote 8 above), and even a few perfect stems with no reduplication (e.g. ved- from √vid- 'know').

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18. It is, moreover, the view that is implicit in most of the traditional grammatical studies of Sanskrit, e.g. Whitney 1889.

19. This is the native grammarians' seventh class. "Strong" versus "weak" forms of the stem are distributed according to morphological category, e.g. singular versus plural, active versus middle, etc. The underlying /n/ of the infix changes to [n], [ñ], etc. in predictable phonological environments.

20. As a reduplicated present, ja:grmi would be unusual in having a weak grade second syllable, and the absence of any intensive meaning is noteworthy.

21. In fact, another detailed study of Sanskrit reduplication and related topics has recently appeared (Steriade 1985), although we gained access to it too late to permit further account to be taken of it in this paper. Still, it is significant that Steriade's paper, while involving a different focus and approach from ours, completely supports the idea that Sanskrit has far more than just one reduplication rule, and so provides independent motivation for our proposed concept of "rule-constellation". Steriade employs a Marantzian autosegmental approach to reduplication in Sanskrit, and this gives us a chance to add here one final remark on this general type of analysis. We firmly believe that the essentials of the autosegmental view of phonology and morphology have much to contribute to the analysis of reduplication both in Sanskrit and crosslinguistically, and our analysis in this paper is couched mainly in autosegmental terms. Nevertheless, we are not convinced of the necessity of adopting the Marantzian variation on this theme whereby the entire phonemic melody of a root or stem is copied over a reduplicative template, regardless of how much of that melody actually appears on the surface. For arguments in favor of alternative approaches involving more limited copying (albeit with freer copying power), see Janda 1984, Hoeksema & Janda 1985.

REFERENCES

Anderson, S. R. 1982. "Where's Morphology?". LIn 13.571-612.

Aronoff, M. 1976. Word Formation in Generative Grammar. MIT Press.

Bell, S. J. 1983. "Internal C Reduplication in Shuswap", LIn 14.332-338.

Borowsky, T. & R.-A. Mester. 1983. "Aspiration to Roots. Remarks on the Sanskrit Diaspirates". CLS 19:52-63.

Broselow, E. I. 1983. "Salish Double Reduplications: Subjacency in Morphology", Natural Language and Linguistic Theory 1.317-346.

Proceedings of the Second Eastern States Conference on Linguistics [ESCOL '85], Columbus: OSU Department of Linguistics, pp. 103-119 [54. [Reprinted in slightly revised form in Studies on Language Change. Ohio State University Working Papers in Linguistics 34 (1986), pp. 84-107.]

Broselow, E. I. & J. McCarthy. 1983. "A Theory of Internal Reduplication", Linguistic Review 3.25-88.

Cairns, C. E. & M. H. Feinstein. 1982. "Markedness and the Theory of Syllable Structure". LIn 13.193-225.

Carrier[-Duncan], J. L. 1979. The Interaction of Morphological and Phonological Rules in Tagalog. MIT Ph.D. Dissertation.

_____. 1984. "Some Problems with Prosodic Accounts of Reduplication". In M. Aronoff and R. Oehrle, eds., Language Sound Structure. Cambridge: MIT Press, pp. 260-286.

Everett, D. & L. Seki. 1985. "Reduplication and CV Skeleta in Kamaiurá", LIn 16.326-330.

Ferguson, C. 1981. "Simplified Registers and Linguistic Theory", unpublished paper, Stanford University (prefinal draft of (revised) paper published in L. K. Obler & L. Menn (eds.), Exceptional Language and Linguistics. New York: Academic Press, 1982).

Hjelmslev, L. 1939/1959. "La structure morphologique", V^me Congrès International des Linguists. Rapports. Bruges, 1939, pp. 66-93 (reprinted in revised form in Essais linguistiques. Travaux du Cercle linguistique de Copenhague 12 (1959):113-138).

Hoeksema, J. & R. D. Janda. 1985. "Implications of Process-Morphology for Categorial Grammar". Paper presented at the Conference on Categorial Grammars & Natural Language Structures, Tucson, AZ, May 31-June 2.

Hollenbach, B. E. 1984. The Phonology and Morphology of Tone and Laryngeals in Copala Trique. University of Arizona Ph. D. Dissertation.

Janda, R. D. 1982a. "Of Formal Identity and Rule-(Un)Collapsibility: On Lost and Found Generalizations in Morphology". In D. Flickinger et al., eds., WCCFL 1:179-197.

_____. 1982b. "High German *Umlaut* and Morphologization", unpublished University of Arizona ms.

_____. 1983a. "Two Umlaut-Heresies and Their Claim to Orthodoxy". University of Arizona Coyote Papers 4:59-71.

_____. 1983b. "'Morphemes' Aren't Something That Grows on Trees: Morphology as More the Phonology Than the Syntax of Words". In Richardson et al., eds., Interplay. Chicago: Chicago Linguistic Society, pp. 79-95.

_____. 1984. "Why Morphological Metathesis Rules Are Rare: On the Possibility of Historical Explanation in Linguistics". BLS 10:87-103.

Joseph, B. & R. Janda. (In Preparation). "Sanskrit as She is Misanalyzed Autosegmentally".

Kiparsky, P. 1979. "Metrical Structure Assignment is Cyclic". LIn 10.421-441.

Marantz, A. 1982. "Re Reduplication". LIn 13.435-482.

Mayrhofer, M. 1956. Kurzgefasstes etymologisches Wörterbuch des Altindischen. Heidelberg.

McCarthy, J. 1979. Formal Problems in Semitic Phonology and Morphology. MIT Ph. D. Dissertation.

_____. 1981. "A Prosodic Theory of Nonconcatenative Morphology", LIn 12.373-418.

Meillet, A. 1903-1904. "[Review of] Michel Bréal. Essai de sémantique. Science des significations, 3e édition revue, corrigée et augmentée, Paris, 1904", L'Année sociologique 8:640-641.

_____. 1964. Introduction à l'étude comparative des langues indo-européennes. University, Alabama: University of Alabama Press (reprint of 8th edition of 1937).

Moravcsik, E. A. 1978. "Reduplicative Constructions", in J. Greenberg (ed.), Universals of Human Language. Vol. 3: Word Structure. Stanford: Stanford Univ. Press, pp. 297-334.

Odden, D. & M. Odden. 1985. "Ordered Reduplication in Kíhehe". LIn 16.497-503.

Sag, I. 1976. "Pseudosolutions to the Pseudoparadox: Sanskrit Diaspirates Revisited". LIn 7.609-622.

Schindler, J. 1976. "Diachronic and Synchronic Remarks on Bartholomae's and Grassmann's Laws", LIn 7.622-637.

Stemberger, J. P. 1980. "Another Look at Grassmann's Law", Glossa 14.113-135.

Proceedings of the Second Eastern States Conference on Linguistics [ESCOL '85], Columbus: OSU Department of Linguistics, pp. 103-119 [54. [Reprinted in slightly revised form in Studies on Language Change. Ohio State University Working Papers in Linguistics 34 (1986), pp. 84-107.]

Steriade, D. 1985. "Reduplication, Ablaut and Syllabicity in Sanskrit", unpublished MIT ms.

Stevens, A. 1985. "Reduplication in Madurese", paper presented at ESCOL 85.

ter Mors, C. 1984. "Affix to X. Broselow & MccCarthy Versus Marantz: A Reinterpretation", Linguistic Review 3.275-298.

Yip, M. 1982. "Reduplication and C-V Skeleta in Chinese Secret Languages", LIn 13.637-61.

Whitney, W. D. 1885. The Roots, Verb-Forms, and Primary Derivatives of the Sanskrit Language. Leipzig: Breitkopf und Härtel.

_____. 1889. Sanskrit Grammar^2. Cambridge: Harvard University Press.

Wilbur, R. 1973. The Phonology of Reduplication. University of Illinois Ph. D. Dissertation.