1993

How Peculiar is Evaluative Morphology?

Gregory Stump

University of Kentucky, gstump@uky.edu

Follow this and additional works at: https://uknowledge.uky.edu/lin_facpub

Part of the [Morphology Commons](#)

[Right click to open a feedback form in a new tab to let us know how this document benefits you.](#)

Repository Citation

Stump, Gregory, "How Peculiar is Evaluative Morphology?" (1993). *Linguistics Faculty Publications*. 28.
https://uknowledge.uky.edu/lin_facpub/28

This Article is brought to you for free and open access by the Linguistics at UKnowledge. It has been accepted for inclusion in Linguistics Faculty Publications by an authorized administrator of UKnowledge. For more information, please contact UKnowledge@lsv.uky.edu.

How Peculiar is Evaluative Morphology?

Digital Object Identifier (DOI)

10.1017/S0022226700000037

How peculiar is evaluative morphology?¹

GREGORY T. STUMP

Department of English, University of Kentucky

(Received 24 March 1992; revised 8 October 1992)

I. INTRODUCTION

Many languages possess morphological rules which serve to express diminution or augmentation, endearment or contempt; examples are the Breton rule relating *potr* ‘boy’ to *potrig* ‘little boy’, the Shona rule relating *chibikiso* ‘cooking tool’ to *zichibikiso* ‘huge cooking tool’ and the Italian rule relating *poeta* ‘poet’ to *poetastro* ‘bad poet’. Because of the possibility of interpreting diminution and augmentation in affective rather than purely objective terms (Wierzbicka, 1980: 53ff.; Szymanek, 1988: 106ff.), morphological expressions of diminution or augmentation are not always discrete from those of endearment or contempt; that is, diminutives and augmentatives are frequently used as expressions of endearment (such as Italian *sorella* ‘sister’ → *sorellina* ‘dear little sister’, *donna* ‘woman’ → *donnotta* ‘fine, stout woman’) or disdain (Italian *uomo* ‘man’ → *uomicciuolo* ‘contemptible little man’, *donna* → *donnona* ‘overgrown girl’).

Rules expressing these notions sometimes exhibit the distinctive property of allowing one or more morphosyntactic feature specifications to persist (or ‘percolate’) from a base to its derivative; for instance, the Breton rule of diminutivization preserves the gender of a nominal base (for example *potr* (masc.) → dim. *potrig* (masc.); *merc’h* ‘girl’ (fem.) → dim. *merc’hig* (fem.)). Where *F* is a morphosyntactic feature whose specification is allowed to persist from base to derivative by a rule of this sort, the rule will here be said to be TRANSPARENT WITH RESPECT TO *F*.

Rules which are transparent with respect to some morphosyntactic feature apparently never change the syntactic category of the base to which they apply. That is, for any two distinct syntactic categories *X* and *Y*, no rule which is transparent with respect to some morphosyntactic feature *F* ever applies to a base of category *X* to produce a derivative of category *Y*, even if *F* is a feature for which members of both *X* and *Y* may in principle be

[1] Earlier versions of this article were presented at Wayne State University in March 1991 and at Indiana University in April 1992. I wish to thank the members of those audiences and three anonymous referees for their suggestions. Thanks also to Allan Gatibaru, Esther Kinyanjui and Alex Mutonyi for helpful information concerning spoken Kikuyu.

specified; for instance, no language to my knowledge has a rule producing denominal adjectives which retain the gender of their nominal base.² The property of allowing a derivative to retain the syntactic category of its base is particularly salient in the case of rules expressing diminution, augmentation, endearment or contempt, since rules of this sort are frequently applicable to bases of more than one category; for instance, the Breton rule forming diminutives in *-ig* applies not only to nouns but to adjectives (*bihan* 'little' → *bihanig* 'very little'), adverbs (*bremañ* 'now' → *bremaig* 'presently'), and prepositions (*e-kichen* 'near' → *e-kichenig* 'very near').

The focus of the present discussion is that class of morphological rules which express diminution, augmentation, endearment or contempt and which are transparent with respect to some morphosyntactic feature. I shall refer to such rules as EVALUATIVE RULES. It should be carefully noted at the outset of this discussion that some morphological rules expressing diminution, augmentation, endearment or contempt are not transparent with respect to any morphosyntactic feature and therefore fail to qualify as evaluative rules as this term is here employed. Thus, unlike the Breton rule producing diminutives in *-ig*, the French rule producing diminutives in *-eau* is not transparent with respect to gender (or to any other morphosyntactic feature): derivatives in *-eau* are uniformly masculine, regardless of the gender of their base (for example, *chèvre* 'goat' (fem.) → dim. *chevreau* 'kid' (masc.), *souris* 'mouse' (fem.) → dim. *souriceau* 'small mouse' (masc.), *tonne* 'cask' (fem.) → dim. *tonneau* 'keg' (masc.)).

Evaluative morphology has certain special peculiarities which set it apart from much derivational morphology, as has been widely noted (Jaeggli, 1980; Bochner, 1984; Malicka-Kleparska, 1985; Perlmutter, 1988; Szymanek, 1988; Stump, 1989, 1990; Carstairs-McCarthy, 1992); nevertheless, the precise nature and theoretical import of these peculiarities are not widely agreed upon. My purpose here is to discuss what I believe is the right

[2] An apparent counterexample to this claim is found in Sanskrit, where the final, nominal member of an adjectival compound seemingly determines the gender of the compound itself: for instance, the compounding of *a-* 'not' with the feminine noun *prajā-* 'offspring' produces a privative adjectival stem *aprajā-* 'childless' which, as a member (like *prajā-* itself) of the derived *ā* stem declension, only gives rise to feminine case forms; masculine and neuter case forms for 'childless' must instead be constructed from a distinct stem *apraja-* belonging to the *a* stem declension. I would argue, however, that the rule producing adjectival compounds is not transparent with respect to the morphosyntactic feature of gender, but instead merely allows two distinct adjectival compounds – belonging to two distinct declension classes – to be constructed from the same two elements. For instance, compounding *a-* with a derived *ā* stem (such as *prajā-*) would give rise to both a derived *ā* stem adjective (*aprajā-*) and an *a* stem adjective (*apraja-*); redundantly, the former would be used in the construction of feminine case forms, while the latter would be used for masculine and neuter case forms. This approach is favoured over the gender transparency approach by the fact that compounding *a-* with a non-feminine, *a* stem noun (such as the neuter noun *bala-* 'strength') likewise produces two alternative adjectival stems: a derived *ā* stem (for example *abalā-* 'feeble') giving rise to feminine case forms and an *a* stem (such as *abala-* 'feeble') giving rise to both masculine and neuter case forms.

explanation for these peculiarities and their implications for morphological theory. As a starting point, however, it will be useful to consider an alternative view of evaluative morphology, that of Scalise (1986: 131ff.; 1988: 233ff.).

2. SCALISE'S CONCEPTION OF EVALUATIVE MORPHOLOGY

Drawing upon evidence from Italian, Scalise argues that evaluative rules possess a cluster of six properties which distinguishes them from ordinary derivation on the one hand and from inflection on the other. The properties at issue are listed in (1).

- (1) *Six properties of evaluative affixes in Italian* (Scalise, 1986: 132f.)
 - (a) They change the semantics of the base.
 - (b) They allow the consecutive application of more than one rule of the same type, and at every application the result is an existent word.
 - (c) They are always external with respect to other derivational suffixes and internal with respect to inflectional morphemes.
 - (d) They allow, although to a limited extent, repeated application of the same rule on adjacent cycles.
 - (e) They do not change the syntactic category of the base they are attached to.
 - (f) They do not change the (morpho)syntactic features or the subcategorization frame of the base.

Though Scalise's discussion is based on evidence from Italian, the properties in (1) can be exemplified by evaluative affixes in a variety of languages. Thus, consider the formation of diminutives in Zulu (described by Doke (1930: 73ff., 103)). The most usual diminutive-forming affix in Zulu is *-ana*. The semantic effects of this suffix are not completely uniform: the diminutive of a noun *x* can convey the meaning of 'small *x*' (as in *umfana* 'boy', dim. *umfanyana* 'little boy'), 'young of *x*' (*indoda* 'man', dim. *indodana* 'son'), or 'small quantity of *x*' (*amazwi* 'words', dim. *amazwana* 'a few words'), and sometimes has a pejorative ring (*isalukazi* 'old woman', dim. *isalukazana* 'small hag'); nevertheless, in each instance, the diminutive affix exhibits the property (1a) of changing the semantics of the base expression. Zulu also has a suffix *-azana*, used to form feminine diminutives,³ since diminutives in *-azana* are themselves subject to diminutivization by *-ana* (for example *intombi* 'maiden', fem. dim. *intombazana* 'little girl', double

[3] One might attempt to view *-azana* as a complex sequence consisting of a feminine suffix *-az* followed by the diminutive suffix *-ana*. Note, however, that *-azana* is sometimes used to form diminutives without a feminine interpretation: *umhlaza* 'tuberous vegetable', *umhlazazana* 'small tuber' (Doke, 1930: 78).

dim. *intombazanyana* 'very small girl'), Zulu diminutive morphology exhibits the property of consecutive application in (1b). Property (1d) is essentially the subcase of (1b) in which the same rule applies two or more times in succession; as Doke demonstrates, the diminutive suffix *-ana* possesses this property as well (such as *inja* 'dog', dim. *injana* 'little dog', double dim. *injanyana* 'very little dog', triple dim. *injanyanyana* 'exceedingly tiny dog'). The suffix *-ana* attaches not only to nouns, but to adjectives and adverbs. In doing so, it does not change the syntactic category of an expression to which it attaches, but joins with adjectives to produce adjectives (*-khulu* 'large', dim. *-khulwana* 'somewhat large'), with adverbs to produce adverbs (*kude* 'afar', dim. *kudana* 'a little distance off'), and with nouns to produce nouns (*umfana* 'boy', dim. *umfanyana* 'little boy'); thus, *-ana* exhibits property (1e). Moreover, *-ana* does not change any of the morphosyntactic features of its base. For instance, nominal derivatives in *-ana* preserve the gender of their base: thus, just as the nominal root *-ntu* 'person' in (2a) belongs to gender 1/2 (as revealed by its singular and plural noun class prefixes *um-* and *aba-*), so does its diminutive; just as the nominal root *-doda* 'man' in (2b) belongs to gender 9/6 (as revealed by its singular and plural nouns class prefixes *in-* and *ama-*), so does its diminutive. Thus, Zulu diminutive morphology exhibits property (1f) as well.

(2)			SINGULAR
	GENDER	SINGULAR	DIMINUTIVE
(a)	-ntu 'person': 1/2	umuntu	umntwana 'child'
(b)	-doda 'man': 9/6	indoda	indodana 'son'
		PLURAL	
		PLURAL	DIMINUTIVE
		abantu	abantwana
		amadoda	amadodana
			(Doke, 1930: 38, 54, 76)

Property (1c), according to which evaluative affixes are always external with respect to derivational suffixes and internal with respect to inflection, will be examined at length in section 3; for the moment, however, note that (1c) is compatible with at least some aspects of Zulu diminutive morphology. It is clear that the diminutive suffix *-ana* may follow a derivational suffix; in the examples in (3), for instance, it attaches to derivative nouns in *-o* (with elision of the deverbal suffix). Since nominal inflections are prefixal rather than suffixal in Zulu, the hierarchical relation between the diminutive affix and the inflectional affix in a Zulu noun such as *um-fan-yana* 'little boy' is equivocal: *-ana* could in principle be either internal with respect to the class 1 singular inflectional prefix *um-* (as in (4a)) or external with respect to it (as in (4b)); of the two possibilities, only (4a) is compatible with property (1c).

EVALUATIVE MORPHOLOGY

(3)	VERB STEM	NOMINAL DERIVATIVE	DIMINUTIVE
	-mba 'dig'	isimbo 'digging stick'	isimbana
'little digging stick'
	vimba 'block up'	isivimbo 'stopper'	isivinjana
'little stopper'
- (Doke, 1930: 66, 75, 153f.)
- (4) (a) [um-[fan-yana]]
(b) [[um-fan]-yana]

As Scalise observes, (1a–f) coincide neither as properties of inflection nor as properties of ordinary derivation: properties (1a, b) are more typical of ordinary derivation, (1e, f) are more typical of inflection, and (1c, d) are not typical of either inflection or ordinary derivation. To account for this systematic difference between evaluative morphology, inflection and ordinary derivation, Scalise (1986: 133; cf. 1988: 235f.) proposes the level-ordered conception of morphology in (5), according to which rules of evaluative morphology occupy a separate level or subcomponent, whose members uniformly possess the properties in (1), unlike the rules in the derivational and inflectional subcomponents. Although Scalise uses Italian data to motivate the conception of morphology in (5), it is critical to ask whether this conception can be generalized to other languages with extensive evaluative morphology; in so far as evaluative affixes possess a recurring cluster of properties from one language to another, a universal account of these properties is desirable. I shall argue that Scalise's conception of evaluative morphology does not generalize satisfactorily to other languages.

- (5) Scalise's (1986: 133) conception of morphology:

One immediate criticism which might be levelled at this conception of morphology is that it presumes that inflectional rules always apply after all word-formation rules; see Lieber (1980), Bochner (1984), Rice (1985), Stump

(1990), Baksi (1992) and LeSourd (1992) for evidence demonstrating the erroneous nature of this presumption. But even if this issue is left aside, there are still at least four other objections that might be raised against the view of evaluative morphology schematized in (5). Two of these are of a theoretical nature. First, one might question whether the properties of evaluative rules are really so distinctive as to justify the postulation of a separate subcomponent housing just evaluative rules and nothing else; that is, one might wonder whether there are non-evaluative rules that share the properties in (1). Second, the three-level conception of morphology in (5) is, in any event, incapable of explaining why evaluative rules evince precisely the cluster of six properties in (1); although it accounts for property (1c), (5) does not explain why (1c) should necessarily coincide with the other five properties in (1). In addition to these two theoretical objections are two others of a purely empirical nature: to begin with, the claim (1c) that evaluative affixes are always external to derivation and internal to inflection is plainly falsified in many languages; in addition, even though evaluative affixes are by definition transparent with respect to at least one morphosyntactic feature, the stronger claim (1f) that evaluative affixes do not change ANY of the morphosyntactic features of the base to which they attach is likewise sometimes falsified. My discussion will proceed as follows. In sections 3 and 4, I develop the two latter, empirical objections, arguing that properties (1c) and (1f) must both be revised if the list of properties in (1) is to have any cross-linguistic validity. In section 5, I turn to the first of the two theoretical objections to the three-level morphology in (5): I argue that evaluative rules are not so peculiar as to require their own subcomponent, but actually share their properties with a broader class of rules. In section 6, I address the second of the two theoretical objections: I propose an alternative conception of morphology according to which the special properties of evaluative rules follow directly from their status as CATEGORY-PRESERVING RULES. In section 7, an additional property of category-preserving rules is discussed; a theoretical account of this property is proposed and exemplified. My conclusions are summarized in section 8.

3. EVALUATIVE MORPHOLOGY, INFLECTION AND DERIVATION

Once cross-linguistic evidence is considered, the claim (1c) that evaluative morphology is always external with respect to derivation and internal with respect to inflection can be seen to be falsified in both directions: evaluative rules sometimes precede derivational rules and sometimes follow inflectional rules. This can be seen particularly clearly by comparing the formation of diminutives in various languages.

Consider first the following diminutive formations from Southern Barasano (an Eastern Tucanoan language of Colombia):

(6) *Diminutives in Southern Barasano* (Merrifield *et al.*, 1974: 203; see also Smith, 1973: 46ff.; Jones & Jones, 1991: 14, 43f.)

	SINGULAR BASE	SINGULAR DIMINUTIVE	PLURAL BASE	PLURAL DIMINUTIVE
(a) 'pot'	coti	cotiaka	cotiri	cotiriaka
'platform'	kacabo	kacaboaka	kacabori	kacaboriaka
'house'	wi	wiaka	wiri	wiriaka
'shelter'	wihai	wihaiaka	wihairi	wihairiaka
(b) 'vine'	bicibā	bicibāka	bici	biciaka
'hair'	hoabā	hoabāka	hoa	hoaka
(c) 'bone'	gɔaro	gɔaroaka	gɔa	gɔaka
'banana'	ohoro	ohoroaka	oho	ohoaka

As the examples in (6) show, the Southern Barasano diminutive suffix *-aka* attaches both to inflected plurals (as in the plural diminutives in (6a)) and to inflected singulars (as in the singular diminutives in (6b, c)).⁴ Similar patterns show up in a number of other languages. In Welsh, for example, plural diminutives such as those in (7) are formed from inflected plurals by suffixing *-ach* or *-os* (the former expressing contempt, the latter, endearment).

(7) *Plural diminutives in Welsh* (Williams, 1980: 16)

	SINGULAR BASE	PLURAL BASE	PLURAL DIMINUTIVE(S)
'boy'	bachgen	bechgyn	bechgynnos, bechgynnach
'wife'	gwraig	gwagedd	gwageddos
'girl'	merch	merched	merchetos, merchetach
'child'	plentyn	plant	plantos, plantach
'worm'	pryf	pryfed	pryfetach

A more complex interaction between diminutivization and inflection is found in Kikuyu (a Bantu language of Kenya). Typically of Bantu languages, Kikuyu has an elaborate system of over a dozen noun classes, in which the 'gender' of a noun is the noun class of its singular form paired with the noun class of its plural form; a noun's membership in a particular gender thus determines the form of both its singular and plural inflections and the agreement morphology carried by concording expressions. Consider, for instance, the noun *-rigũ* 'banana': as a member of gender 5/6, it takes the class 5 prefix *i-* in the singular and the class 6 prefix *ma-* in the plural, as in (8); moreover, its gender determines the use of the class 5 agreement prefix *rĩ-* in each of the concording expressions in (8a) and the use of the class 6 agreement prefix *ma-* in each of the concording expressions in (8b).⁵

[4] Because verbs agree in number with their subjects in Southern Barasano (Jones & Jones, 1991: 19, 73), the singular and plural markings in (6) are to be regarded as inflectional.

[5] Here and throughout, I assume the numbering of noun classes given by Barlow (1960: 14A) and Bennett *et al.* (1985: 61ff.); note that Barlow's numbering of the diminutive classes –

- (8) (a) *irigũ* *rĩrĩa* *rĩaku*
 banana(GEN.5/6) that(AGR:CL.5) your(AGR:CL.5)
 rĩēga *nĩrĩbuthĩte*
 nice(AGR:CL.5) has:gone:bad(AGR:CL.5)
 ‘That nice banana of yours has gone bad.’
- (b) *marigũ* *marĩa* *māku*
 bananas(GEN.5/6) those(AGR:CL.6) your(AGR:CL.6)
 mēga *nĩmabuthĩte*
 nice(AGR:CL.6) have:gone:bad(AGR:CL.6)
 ‘Those nice bananas of yours have gone bad.’
- (Barlow, 1960: 14)

In Kikuyu, diminutive nouns belong to gender 12/13, characterized by the class 12 prefix *ka-* in the singular and the class 13 prefix *tũ-* in the plural. Nouns from other genders can be very freely shifted to gender 12/13 to form nouns with diminutive meanings. Interestingly, this shift in gender comprises three distinct subcases (see Barlow, 1960: 260f.). In the default case, an uninflected nominal base of gender α/β is shifted to gender 12/13 and therefore shows the prefixes *ka-/tũ-* to the exclusion of the prefixes proper to gender α/β ; this case is exemplified by the forms in (9a). On the other hand, nouns with class 1 singulars typically retain the singular class 1 prefix *mũ-* when diminutivized; thus, the gender 12/13 prefixes *ka-/tũ-* appear along with *mũ-* in the forms in (9b).⁶ Note that even though it is a singular prefix, *mũ-* appears in both the singular and the plural of the diminutives in (9b). Finally, nouns in gender 3/4 retain their class prefixes (the singular class 3 prefix *mũ-* and the plural class 4 prefix *mĩ-*) when diminutivized, and these prefixes accord with the number of the resulting diminutive forms; thus, the diminutives in (9c) have singulars in *ka-mũ-* (class 12 prefix + class 3 prefix) and plurals in *tũ-mĩ-* (class 13 prefix + class 4 prefix). Despite the presence of the class 1 prefix *mũ-* in the diminutives in (9b) and the gender 3/4 prefixes *mũ-* and *mĩ-* in the diminutives in (9c), such diminutives always function syntactically as unequivocal members of gender 12/13, as the agreement patterns in (10) and (11) show.

(9) *Kikuyu diminutives*

			SINGULAR		PLURAL
	GENDER	SINGULAR	PLURAL	DIMINUTIVE	DIMINUTIVE
(a) ‘bed’	3/6	ũrĩrĩ	marĩrĩ	karĩrĩ	tũrĩrĩ
‘hole’	5/6	irima	marima	karima	tũrima
‘hill’	7/10	kĩrĩma	irĩma	karĩma	tũrĩma

12 (singular) and 13 (plural) – is assumed here, rather than the reverse numbering – 13 (singular) and 12 (plural) – advocated by Bennett *et al.*

[6] According to Barlow (1960: 260f.), certain other nouns likewise exhibit a retention of their singular class prefix under diminutivization, including most members of genders 11/10 and 14/6 and certain members of genders 5/6 and 9/10.

EVALUATIVE MORPHOLOGY

	'goat'	9/10	mbūri	mbūri	kabūri	tūbūri
	'fence'	11/10	rūgiri	ngiri	kagiri	tūgiri
(b)	'person'	1/2	mündū	andū	kamündū	tūmündū
	'friend'	1/2	mūraata	araata	kamūraata	tūmūraata
	'student'	1/2	mūrutūo	arutūo	kamūrutūo	tūmūrutūo
	'poor man'	1/2	mūthĩĩni	athĩĩni	kamūthĩĩni	tūmūthĩĩni
	'child'	1/10	mūana	ciana	kamūana	tūmūana
(c)	'can'	3/4	mūkebe	mīkebe	kamūkebe	tūmīkebe
	'strap'	3/4	mūkwa	mīkwa	kamūkwa	tūmīkwa
	'disease'	3/4	mūrimū	mīrimū	kamūrimū	tūmīrimū
	'lion'	3/4	mūrūthi	mīrūthi	kamūrūthi	tūmīrūthi
	'tree'	3/4	mūtĩ	mītĩ	kamūtĩ	tūmītĩ
(10) (a)	<i>kamündū</i>		<i>karĩa</i>		<i>kanini</i>	
	little: person(GEN.12/13)		that(AGR:CL.12)		little(AGR:CL.12)	
	'that little person'					
(b)	<i>tūmündū</i>		<i>tūrĩa</i>		<i>tūnini</i>	
	little: people(GEN.12/13)		those(AGR:CL.13)		little(AGR:CL.13)	
	'those little people'					
(11) (a)	<i>kamūkwa</i>		<i>gaka</i>		<i>kanini</i>	
	little: strap(GEN.12/13)		this(AGR:CL.12)		little(AGR:CL.12)	
	'this little strap'					
(b)	<i>tūmīkwa</i>		<i>tūtū</i>		<i>tūnini</i>	
	little: straps(GEN.12/13)		these(AGR:CL.13)		little(AGR:CL.13)	
	'these little straps'					

Since the Kikuyu noun class prefixes are inflectional (as the agreement relations in (8), (10) and (11) show), diminutivization clearly follows inflection in the singular and plural diminutive forms in (9b, c), just as in the inflected diminutives in Southern Barasano. There are, however, three respects in which the Kikuyu case differs from the Southern Barasano case. First, there is no diminutive affix *per se* in Kikuyu; diminutivization is instead a non-affixational process shifting nouns from one gender into another (a process whose output is then, of course, subject to the general rules of inflection by which gender and number are spelled out as noun class prefixes).⁷ Second, whereas the internal inflection in a Southern Barasano diminutive encodes the number of the diminutive as a whole, the internal inflection *mū-* in Kikuyu diminutives such as those in (9b) is morpho-syntactically inert; on the other hand, the internal inflections *mū-* and *mī-* DO encode the number of diminutive forms such as those in (9c) and are

[7] Thus, I reject the view (see Mufwene, 1980: 253) that *ka-* and *tū-* are diminutivizing derivational affixes in Kikuyu. Note, in this connection, that not all members of gender 12/13 are diminutives of other nouns; for example *karagita* 'tractor', *karani* 'secretary' (Bennett *et al.*, 1985: 114ff.).

therefore comparable in their syntactic relevance to the number inflections in Southern Barasano diminutives. Finally, whereas diminutivization follows inflection in Southern Barasano, the Kikuyu diminutive rule actually applies between two inflectional rules; for instance, the plural diminutive *tũmĩĩ* 'little trees' arises from the nominal root *-ĩĩ* 'tree' (gender 3/4) through the successive application of *mĩ*-prefixation (the class 4 pluralization rule), the diminutive rule (which shifts *mĩĩ* to gender 12/13), and *tũ*-prefixation (the class 13 pluralization rule). This sandwiching of an evaluative rule between two inflectional rules is not an unusual phenomenon: compare the formation of plural diminutives in Yiddish (*xosid-l* 'little Chasid', pl. *xosid-im-l-ex*; Bochner, 1984; Perlmutter, 1988), Breton (*bag-ig* 'little boat', pl. *bag-ou-ig-ou*; Stump, 1989, 1990) and Portuguese (*animal-zinho* 'little animal', pl. *animai-zinho-s*; compare *animai-s* 'animals'; Ettinger, 1974: 60), and the formation of plural augmentatives in Shona (*mu-rume* 'man', pl. *va-rume*, dim. *zi-mu-rume*, pl. dim. *ma-zi-va-rume*; Stump, 1991); compare also occasional English examples such as *onesies*, *twosies*, *threesies* (stages in the game of jacks); *to go halvesies* ('to split expenses'); *ten little toesies* (a nursery game); *Those Cute Little Bearzy Wearzies* (a comic strip by R. Crumb).

It is clear from this evidence that, contrary to (1c) and (5), rules of evaluative morphology sometimes apply after rules of inflection. Moreover, there is evidence that they may also apply before rules of suffixal derivation. Consider, for instance, the Spanish rule deriving denominal personal nouns in *-ero*: as the examples in (12) show, this rule can apply to diminutive nouns in *-illa/-illo*, clearly counterexemplifying (1c). Examples of this sort disconfirm the level-ordered view of morphology in (5). Moreover, because it entails that all derivation – suffixal or otherwise – necessarily precedes all evaluative morphology, (5) is further disconfirmed by cases in which non-suffixal rules of derivation follow evaluative rules: in Zulu, for instance, *umntwana* 'child' (the diminutive of *umuntu* 'person') has the nominal derivative *ubuntwana* 'childhood' (Doke, 1930: 60) and the adverbial derivative *ngangomntwana* 'the same size as a child' (Doke, 1930: 250); similarly, the Breton diminutive adjective *bihanig* 'very small' is the base of the derived verb stem *bihanik-* (inf. *bihanikaat*) 'make or become very small'.

(12) *Personal derivatives in -ero from Spanish diminutives in -illa/-illo*
(Stahl & Scavnick, 1973: 132)

BASE	DIMINUTIVE	PERSONAL DERIVATIVE IN <i>-ERO</i>
bandera 'banner'	banderilla 'decorated dart used in bullfighting'	banderillero 'one who implants banderillas in bullfighting'

EVALUATIVE MORPHOLOGY

campana 'bell'	campanilla 'hand bell'	campanillero 'town crier'
canasto 'basket'	canastillo 'small basket'	canastillero 'one who makes or sells small baskets'
huso 'spindle'	husillo 'small spindle'	husillero 'person who attends the spindle in an oil mill'
órgano 'organ'	organillo 'barrel organ'	organillero 'organ grinder'

Thus, whatever the facts may be in Italian, it is clear that evaluative rules generally interact much more freely with rules of inflection and derivation than Scalise's claim (1c) acknowledges and than his theory (5) allows.

4. EVALUATIVE MORPHOLOGY AND MORPHOSYNTACTIC FEATURE SPECIFICATIONS

Scalise's claim (1f) that evaluative affixes do not change the morphosyntactic features of the base to which they attach likewise cannot be maintained; that is, although evaluative affixes are (by definition) transparent with respect to SOME morphosyntactic feature of the bases to which they apply, they are not necessarily transparent with respect to ALL such features.

Consider, for example, the Tigre data in (13). In Tigre, diminutives and pejoratives are produced by means of the suffixes *-ät*, *-ay*, *-(et)at*, and *-(et)am*: *-ät* and *-(et)at* produce feminine derivatives and *-ay* and *-(et)am* produce masculine derivatives; *-ät* and *-ay* produce singular derivatives and *-(et)at* and *-(et)am* produce plural derivatives. A form derived by means of one of these suffixes receives a diminutive interpretation if its gender matches that of the base from which it derives, and a pejorative interpretation if its gender differs from that of the base (Palmer, 1962: 40ff.); the examples in (13a) illustrate the principle. Despite the fact that the affixes *-(et)at* and *-(et)am* impose feminine and masculine gender (respectively) on their derivatives – that is, despite the fact that neither is transparent with respect to gender – they nevertheless qualify as evaluative affixes, since they are transparent with respect to number; thus, each of the plural diminutives in (13b) preserves the number of its base.

(13) *Some evaluative forms in Tigre* (Palmer, 1962: 40ff.)

(a) Diminutives and pejoratives of 'ənas 'man' and 'əssit 'woman'

	SINGULAR DIMINUTIVE	SINGULAR PEJORATIVE
SINGULATIVE		
'ənas 'man' (masc.)	'ənesay (masc.)	'ənesät (fem.)
'əssit 'woman' (fem.)	'əssität (fem.)	'əssitay (masc.)

PLURAL	PLURAL DIMINUTIVE	PLURAL PEJORATIVE
sāb 'men' (masc.)	sābetam (masc.)	sābetat (fem.)
'ānəs 'woman' (fem.)	'ənsetat (fem.)	'ənsetam (masc.)

(b) Plural diminutives based on the plural forms

	SINGULATIVE	PLURAL	PLURAL DIMINUTIVE
'house' (fem.)	bet	'ābyat	'ābyetat
'voice' (fem.)	kərən	'ākran	'ākrenat
'she-goat' (fem.)	ṭālit	'aṭal	'aṭelat
'cartridge' (fem.)	wəš(š)	'āwšaš	'āwšešat
'lion' (masc.)	ḥāyāt	ḥayut	ḥayutam
'hyena' (masc.)	kāray	'ākārrit	'ākārritam
'hide' (masc.)	mə'ās	'ām'əs	'ām'esam
'house' (masc.)	nəḥəs	'anḥas	'anḥesam
'bachelor' (masc.)	wāreza	wārazit	wārazitam
'bull' (masc.)	wəhər	'āwhərāt	'āwhəretam

Similarly, the Kikuyu diminutive process changes the value of a noun's gender feature to 12/13 (as in each of the examples in (9)), but is nevertheless transparent with respect to number in the formation of diminutives from gender 3/4 bases; and the Shona augmentative rule changes the value of a noun's gender feature to 5/6 (Stump, 1991) but is likewise transparent with respect to number.

It is clear from cases of this kind that although rules of evaluative morphology are by definition transparent with respect to at least one of the morphosyntactic features of the base, they are not necessarily transparent with respect to all such features: they may modify one or more of the morphosyntactic feature specifications of the base. Scalise's property (1f), like (1c), is a contingent fact about Italian morphology rather than a necessary property of all evaluative morphology; that is, (14c, f) are more accurate than (1c, f) as cross-linguistically valid generalizations. Moreover, given the existence of non-affixational processes of evaluative morphology such as the Kikuyu diminutivization process, the remaining properties in (1) should be reformulated in more general terms as properties of evaluative RULES rather than evaluative affixes:

(14) *Six properties of evaluative rules* (cf. (1))

- (a) They change the semantics of the base.
- (b) Two or more such rules may apply in succession, and at every application the result is an existent word or root.
- (c) Evaluative rules may apply before or after both derivational rules and inflectional rules. (Contrast (1c).)

- (d) To a limited extent, the same rule may apply on adjacent cycles.
- (e) They do not change the syntactic category of the base they apply to.
- (f) Although evaluative rules by definition preserve at least one of the morphosyntactic feature specifications of the base, they do not necessarily preserve all of them. (Contrast (1f).)

The precise import of (14b-d) should be carefully noted. The claim is definitely not that ALL rules of evaluative morphology exhibit properties (14b-d), since independent factors may cause some evaluative rules to fail to exhibit one or more of these properties; the claim is instead that in the absence of any such inhibiting factors, evaluative rules exhibit these properties. For instance, the tendency for evaluative rules to exhibit property (14d) is mitigated by the independent tendency for languages to avoid sequences of identical affixes (compare, for example, the avoidance of *-lily* adverbs in English); similarly, I assume that the fact that evaluative rules in Italian apparently precede all inflection and follow all ordinary derivation (and therefore fail to exhibit property (14c)) is the consequence of independent restrictions on these rules, and not (as Scalise assumes) the consequence of some inherent property of evaluative morphology.

Although (14) accurately characterizes the properties of evaluative rules, it is essential to ask whether this cluster of properties is peculiar to evaluative rules alone or is instead shared with a broader class of morphological rules. Scalise's theory (5) is predicated on the assumption that the cluster of properties in (14) (or rather (1)) is unique to evaluative morphology; in the following section, however, I shall show that this is not the case.

5. SANSKRIT COMPOUND VERBS

An extremely productive phenomenon in Sanskrit morphology is the formation of compound verbs consisting of a modifying element known as a PREVERB followed by a verbal head. Whitney (1889: 396) lists the preverbs in (15) as those most regularly used in the formation of this sort of compound; nearly all of these preverbs also serve as independent words with a prepositional or adverbial function. The unusual productivity with which the preverbs in (15) are compounded with verb roots is hinted at by the examples in (16), in which every one of the preverbs in (15) appears as part of a compound verb root headed by *gam-* 'to go'.⁸ As I show in this section, the Sanskrit compound-verb formation exhibits all six of the properties listed in (14). Yet, this is not an instance of evaluative morphology, since

[8] Sanskrit forms are drawn from Whitney (1889) and Monier-Williams (1899).

compound verbs do not express diminution, augmentation, endearment or contempt.

(15) ati 'across, beyond, past, over,
to excess'	upa 'to, unto, toward'
adhi 'above, over, on, on to'	ni 'down, in, into'
anu 'after, along, toward'	nis 'out, forth'
antar 'between, among, within'	parā 'to a distance, away,
forth'
apa 'away, forth, off'	pari 'round about, around'
api 'unto, close upon or on'	pra 'forward, onward, forth,
fore'
abhi 'to, unto, against (often
with implied violence)'	prati 'in reversed direction,
back to or against, against, in
return'
ava 'down, off'	vi 'apart, asunder, away, out'
ā 'to, unto, at'	sam 'along, with, together'
ud 'up, up forth or out'	
(16) gam- 'to go'	ud-gam- 'to come forth, appear
suddenly'
ati-gam- 'to pass by or over'	upa-gam- 'to go near to, come
towards'
adhi-gam- 'to go up to'	ni-gam- 'to settle down upon
or near'
anu-gam- 'to go after, follow'	nir-gam- 'to go out, come forth'
antar-gam- 'to go between'	parā-gam- 'to go away, depart,
die'
apa-gam- 'to go away, depart'	pari-gam- 'to go round, circum-
ambulate'
api-gam- 'to go into, enter'	pra-gam- 'to go forwards, pro-
ceed'
abhi-gam- 'to go near to'	prati-gam- 'to go back, return'
ava-gam- 'to go down to'	vi-gam- 'to go away, depart'
ā-gam- 'to come'	sam-gam- 'to go or come
together, meet'

Consider in detail the question of meaning. Typically, preverbs add a locational or directional meaning to the verbal head with which they are compounded, as in most of the examples in (16); not infrequently, however, the meaning of a compound verb is too idiosyncratic to be computed compositionally from the separate meanings of its preverb and its verbal head, as the examples in (17) show particularly clearly. In either case, though, it is clear that prepositional preverbs change the semantics of the verbal head with which they combine; that is, the Sanskrit compound-verb rule exhibits property (14a).

EVALUATIVE MORPHOLOGY

(17)	VERB ROOT	COMPOUNDED WITH SINGLE PREVERB
	car- 'to move, act'	abhi-car- 'to charm, enchant, bewitch'
	nī- 'to lead'	pari-ñī- 'to marry'
	labh- 'to seize'	pra-labh- 'to cheat, deceive, befool'
	vas- 'to dwell, remain'	upa-vas- 'to fast'
	śī- 'to recline'	saṃ-śī- 'to be uncertain or doubtful'

Compound verbs are not limited to a single preverb. It is not unusual in Sanskrit for two or even three preverbs to 'stack up' in the formation of a compound verb, as in the examples in (18); in such cases, each intermediate stage in the formation of the compound verb root itself functions as the root of its own paradigm. Thus, the compound-verb rule is again analogous to evaluative rules in exhibiting property (14b). Recall, in addition, that property (14d) is in effect simply the subcase of (14b) in which the same operation applies to a base twice in succession; as the examples in (19) show, the compound-verb rule again patterns with evaluative rules in exhibiting this property.

(18)	VERB ROOT	COMPOUNDED WITH A SINGLE PREVERB	COMPOUNDED WITH MULTIPLE PREVERBS
	budh- 'to wake'	vi-budh- 'to become conscious of'	abhi-vi-budh- 'to notice, learn from'
	srj- 'to throw, emit'	ava-srj- 'to let off, let loose'	aty-ava-srj- 'to let loose'
	cakṣ- 'to tell'	ā-cakṣ- 'to announce, declare'	nir-ā-cakṣ- 'to refute, reject'
	hr̥- 'to take'	ā-hr̥- 'to fetch; to speak'	praty-ud-ā-hr̥- 'to reply'
	dhā- 'to put, place'	saṃ-dhā- 'to put together'	saṃ-abhi-saṃ-dhā- 'to place or put into'

(19)	PREVERB	VERB ROOT	DOUBLE COMPOUND VERB ROOT
	ati	ric- 'to leave behind'	aty-ati-ric- 'to surpass exceedingly'
	upa	parā-mṛś- 'to seize, touch'	upa-upa-parā-mṛś- (→ upopa-parā-mṛś-) 'to touch closely'
	pra	sthā- 'to stand'	pra-pra-sthā- 'to rise, advance'
	saṃ	yu- 'to unite'	saṃ-saṃ-yu- 'to unite completely with one's self, consume, devour'

As the examples cited so far show, the addition of a preverb to a verbal head does not change its syntactic category, but always simply creates an

endocentric compound verb; thus, like evaluative rules, the compound-verb rule exhibits property (14e). Preverbs also interact very freely with rules of derivation and inflection. On the one hand, preverbs may be compounded with derived verb roots; in (20), for example, preverbs combine with various denominal and de-adjectival verb roots. On the other hand, verb roots compounded with preverbs may themselves undergo subsequent derivation. For instance, each of the compound roots in (17) is open to nominalization: *abhicāra-* (masc.) 'exorcising, incantation, employment of spells for a malevolent purpose', *pariṇaya-* (masc.) 'marriage', *pralabdhr-* (masc., fem., nt.) 'a cheat, deceiver', *upavāsa-* (masc.) 'a fast, fasting', *saṁśaya-* (masc.) 'uncertainty'.

(20)

SUBSTANTIVAL BASE	DERIVATIVE VERB ROOT	COMPOUND VERB ROOT
artha- 'aim, purpose'	arthaya- 'to strive to obtain'	abhy-arthaya- 'to request, ask for'
pāla- 'protector'	pālaya- 'to protect'	pari-pālaya- 'to protect on every side'
lakṣa- 'mark, sign, token'	lakṣaya- 'to mark, notice'	upa-lakṣaya- 'to look at, observe, behold'
namas- 'bow'	namasya- 'to pay homage'	saṁ-namasya- 'to show respect or honour, worship'

By the same token, a verb root compounded with a preverb may subsequently undergo inflection. Consider, for instance, the formation of gerunds. In Sanskrit grammar, 'gerund' refers not to a class of deverbal nouns but to a class of special non-finite verb forms comparable in their syntactic function to the conjunctive participles found in many modern languages of South Asia (see Masica, 1976: 108ff.). Gerunds are formed directly from verb roots by means of two alternative inflectional suffixes, *-ya* and *-tvā*; the former is used in combination with verb roots which have been compounded with a preverb, and the latter is used otherwise. The gerunds in (21) (corresponding to the simple and compound verb roots given earlier in (17)) illustrate. Clearly the preverbs in the right-hand forms in (21) are hierarchically 'inside' the inflectional suffix *-ya*, since it is their presence which determines the choice of *-ya* over *-tvā*. On the other hand, preverbs may also join with verb forms which are already inflected. Consider, for instance, the forms in (22) (third person singular present indicative and imperfect forms of the compound verb roots cited above in (17)). In each of these examples, the verb root which heads the compound carries exactly the same inflectional markings as it would in the absence of the preverb; in the imperfect forms, these markings include the preterite prefix *a-*, which is positioned internally rather than externally with respect to the preverb. In short, the attachment of a prepositional preverb may either precede or follow both inflectional and

EVALUATIVE MORPHOLOGY

derivational operations; that is, the compound-verb rule, like evaluative rules, exhibits property (14c).⁹

(21) GERUNDS OF SIMPLE ROOTS

caritvā 'having moved'
nītvā 'having led'
labdhvā 'having seized'
uṣitvā 'having remained'

śayitvā 'having reclined'

GERUNDS OF COMPOUND ROOTS

abhicarya 'having charmed'
pariṇīya 'having married'
pralabhya 'having cheated'
upa-uṣya (→ upoṣya)
'having fasted'
saṃśayya 'having been un-
certain'

(22) 3RD SINGULAR PRESENT INDICATIVE

abhi-carati 'he puts a spell on (s.o.)'

pari-ṇayati 'he marries'
pra-labhate 'he fools'

upa-vasati 'he fasts'

saṃ-śete 'he is in doubt'

3RD SINGULAR IMPERFECT

abhy-a-carat 'he put a spell
on (s.o.)'
pary-a-ṇayat 'he married'
pra-a-labhata
(→ prālabhata) 'he fooled'
upa-a-vasat (→ upāvasat)
'he fasted'
sam-a-śeta 'he was in
doubt'

The forms in (22) illustrate one final property of prepositional preverbs: in the formation of a compound verb, they preserve the syntactic features of the verbal head; for instance, just as *acarati* is the third person singular imperfect active form of the simple verb root *car-* 'to move', *abhyacarati* is the third person singular imperfect active form of the compound verb root *abhi-car-* 'to charm'. Thus, the compound-verb rule has property (14f).

Summarizing, it is clear that the rule which compounds preverbs with verbal heads in Sanskrit possesses every one of the properties enumerated in (14); in so far as this rule cannot be plausibly classified as evaluative, it is clear that the properties in (14) do not distinguish evaluative morphology as a separate class of operations. For this reason, the conclusion that evaluative morphology is so peculiar as to deserve its own separate grammatical subcomponent must be rejected.

[9] One referee suggested that there is a substantive difference between Sanskrit compound verb forms such as those in (22) and evaluative forms in which the evaluative marker appears outside of inflectional marking (such as the Southern Barasano examples in (6) and the Welsh examples in (7)): the former are semantically opaque, while the latter are not. It should be carefully noted, however, that the imperfect formation exemplified in (22) exists for all compound verbs, including those which are semantically 'compositional', for instance *pari-gam-* 'to go round', third person singular imperfect *pary-a-gacchat*; conversely, there are clear instances of semantically opaque evaluative morphology outside of inflection, such as Breton *tok-ig* 'robin' (< *tok* 'hat' + *-ig* (dim.)), pl. *tok-ed-ig-ou* [hat-PL-DIM-PL].

6. AN ALTERNATIVE CONCEPTION OF EVALUATIVE MORPHOLOGY

But even when the notion of a separate subcomponent for evaluative morphology is rejected, the question still remains: why should the six properties listed in (14) coincide as properties of the same rule (whether it be a rule of evaluative morphology or a non-evaluative rule like the Sanskrit rule of compound-verb formation)? Elsewhere (Stump, 1990, 1991), I have argued that the morphological rules in a language form a system very different from (5); as I show in this section, this alternative conception of a language's morphological component affords a simple explanation for the coincidence of the six properties in (14).

According to the conception of morphology advocated here, morpho-lexical rules (by which I mean the individual operations of affixation, compounding and internal modification by which complex morphological expressions are built up from their bases; see below) can be classified into three broad types, as in (23). At the heart of this typology is the distinction between roots and words. The *ROOT* of a lexeme is the base form on which the (non-suppletive) forms in that lexeme's inflectional paradigm are constructed. Ordinarily, a lexeme will have a single root, though in cases of heteroclisis, two or more roots may be associated with a single lexeme. *WORDS*, in contrast, are the fully inflected forms occupying the different 'cells' in a lexeme's paradigm. Given these two fundamental concepts, a language's morpholexical rules can be classified according to the kind of relation they establish among roots and words in that language.

(23) *Partial typology of morpholexical rules* (see Stump, 1991)

- (a) Inflectional rules:
 - (i) root-to-word
 - (ii) root-to-stem; stem-to-stem; stem-to-word
 - (iii) word-to-word
- (b) Category-changing rules of derivation and compounding:
 - (i) root-to-root
 - (ii) word-to-root
- (c) Category-preserving rules of derivation and compounding:
 - (i) head_{root}-to-root
 - (ii) head_{word}-to-word

Inflectional rules always produce words, as in (23a). Ordinarily, an inflectional rule applies directly to a root and yields a word in that root's paradigm; inflectional rules of this sort might thus be characterized as *ROOT-TO-WORD* rules. Most familiar inflectional rules, such as the English rule of past-tense *-ed* suffixation, are of this sort; still, not every inflectional rule is root-to-word. In heavily inflected languages, words sometimes arise from their roots not through the application of a single inflectional rule, but through the successive application of two or more such rules. In such cases, it is customary to postulate a class of *STEMS* intermediate between roots and

words (see Matthews, 1972: 63–64, 165–166); the inflectional rules which determine the structure and distribution of these intermediate forms are therefore ROOT-TO-STEM, STEM-TO-STEM or STEM-TO-WORD. The formal analysis of Sanskrit proposed below in section 7.2 includes inflectional rules of each of these three types. Finally, languages occasionally allow inflected words to be constructed directly from other inflected words by means of WORD-TO-WORD inflectional rules; examples are rules which produce double plurals, in languages such as Breton (Trépos, 1957: 223ff.), Lingala (Dzokanga, 1979: 221), Tigre (Palmer, 1962: 39) and Welsh (Williams, 1980: 16f.).¹⁰

Rules of derivation and compounding are of two types: category-changing and category-preserving (Stump, 1991). The difference between these two types is that category-changing rules impose all-new specifications upon their output, including specifications for syntactic category, for all relevant morphosyntactic features, and for purely morphological features. Category-preserving rules, by contrast, allow their output to inherit at least (a) its syntactic category and (b) one of its morphosyntactic feature specifications from its derivational base (or from its head, in the case of category-preserving compounding); in at least some instances, they allow their output to inherit all of its morphosyntactic or purely morphological feature specifications from its base. The wording of this distinction between category-changing and category-preserving rules should be carefully noted. Notice, in particular, that although a category-changing rule assigns a fresh syntactic category to its output, there is no stipulation that this newly assigned syntactic category must be distinct from that of the rule's input; that is, what I have chosen to call 'category-changing rules' might be more perspicuously referred to as 'category-assigning rules'. For instance, even though French *cérissier* 'cherry tree' (masc.) and its base *cérise* 'cherry' (fem.) are both nouns, the rule of *-ier* suffixation is most plausibly regarded as category-changing (that is, category-assigning): there is no reason to assume that the nominal status of *cérissier* is a property inherited from *cérise* rather than one simply imposed by the rule of *-ier* suffixation. Moreover, the rule of *-ier* suffixation cannot be plausibly claimed to be transparent with respect to any morphosyntactic feature: *cérissier* does not inherit the gender of its base, nor does the fact that *cérissier* is singular in any way follow from the fact that *cérise* is unmarked for plural number, since *cérise* is likewise a constituent of the plural *cérissiers*. By contrast, the Breton rule of *-ig* suffixation noted in section 1 is most plausibly regarded as category-preserving: there is good reason to assume that the nominal status of the

[10] Word-to-word rules are heterogeneous in their semantic effects: the application of a word-to-word rule to an inflected form in some instances modifies the meaning of that form (such as Tigre *nāl-at* 'deer (pl.)', double pl. *nāl-at-at* 'very many deer'; Palmer, 1962: 39) but is in other instances semantically vacuous (as in some Hungarian dialects, in which plural number is marked by two discontinuous suffixes in possessed nouns: *tehen-(ej)i-m-ek* [cow-PL-1SG-PL] 'my cows'; Plank, 1985: 79). See Plank, 1985 for relevant discussion.

diminutive derivative *potrig* ‘little boy’ is inherited from that of *potr* ‘boy’ and not simply imposed by the rule of *-ig* suffixation, since *-ig* derivatives are not always nominal, but do always match the syntactic category of their base (compare *bihanig* ‘very small’, *bremaig* ‘presently’, *e-kichenig* ‘very near’); moreover, the rule of *-ig* suffixation is transparent with respect to both gender and number (Stump, 1991). Indeed, since they possess properties (14e, f), rules of evaluative morphology in general belong to the category-preserving type, as does the Sanskrit compound-verb rule.

Category-changing rules always produce roots for derived or compound lexemes. Ordinarily, category-changing rules apply to roots, as in the case of both the derivational rule converting *wide* to *widen* and the compounding rule combining *set* with *up* to form *set-up*; such rules might therefore be characterized as ROOT-TO-ROOT rules. Exceptionally, however, derived or compound roots may arise from fully inflected words by means of WORD-TO-ROOT rules; in Breton, for example, the rule producing denominal adjectives in *-ek* may apply to fully inflected nouns (for example, *deli-où* ‘leav-es’ → *deliaouek* ‘leafy’, *preñv-ed* ‘worm-s’ → *preñvedek* ‘wormy’).

Category-preserving rules apply to roots to produce roots and apply to words to produce words. Unlike inflectional rules and category-changing rules, category-preserving rules produce headed structures;¹¹ in particular, a category-preserving rule either (a) produces the root of a derived or compound lexeme α from the root of the lexeme which heads α , or (b) produces a fully inflected word in the paradigm of a derived or compound lexeme α from the fully inflected word occupying the corresponding cell in the paradigm of the lexeme which heads α . The Sanskrit compound-verb rule, for instance, produces the compound verb root *abhi-car-* ‘to bewitch’ from its head, the verb root *car-*, and produces the fully inflected compound *abhy-acarat* ‘he put a spell on (someone)’ from its head, the fully inflected word *acarat*. In English, nearly all rules of prefixation are category-preserving rules of this sort (exceptions being the rules which generate *enable*, *befriend*, *defrost* and so on).

Elsewhere (Stump, 1990: 112f.) I have argued that morpholexical rules applying to words of some category may also apply to roots of the same category. For instance, in languages with double plurals, the word-to-word rules used in the formation of double plurals from simple plurals can generally also be used in the formation of simple plurals from nominal roots; similarly, the Breton word-to-root rule producing adjectives in *-ek* sometimes applies to uninflected roots (for example *gouizi-* → *gouiziek* ‘learnèd’ (cf.

[11] Following Zwicky (1985a), I reject the widely held assumption that affixes can be heads (Williams, 1981; Selkirk, 1982; Di Sciullo & Williams, 1987; Lieber, 1989); as in Stump (1991), I regard x as the HEAD of y just in case (a) y is the result of applying a category-preserving rule of derivation to x , or (b) y is the result of applying a category-preserving rule of compounding to x and z , where x (rather than z) determines the category of y . See Anderson (1992: 292ff.) for a similar perspective.

gouizieg 'scholar'), *truilh* → *truilhek* 'ragged' (cf. *truilhenn* 'rag')). In contrast, morpholexical rules applying to roots of some category do not necessarily also apply to words of the same category; for instance, the root-to-word rule of past tense *-ed* suffixation and the root-to-root rule converting *wide* to *widen* apply exclusively to roots, never to words.

On this assumption, it should be possible to distinguish two types of category-preserving rules: $\text{HEAD}_{\text{root}}$ -TO-ROOT rules applying exclusively to produce roots from roots and $\text{HEAD}_{\text{word}}$ -TO-WORD rules applying both to produce roots from roots and to produce fully inflected words from other fully inflected words. (Below, I shall refer to these two types of rules less redundantly as HEAD-TO-ROOT and HEAD-TO-WORD rules.) This distinction is clearly revealed in some of the cases of evaluative morphology examined here. Southern Barasano *-aka* is a head-to-word diminutive suffix, attaching to number-inflected nouns (*wiri* 'houses' → *wiriaka*) as well as to uninflected roots (*wi* 'house' → *wiaka*). By contrast, the Spanish diminutive suffix *-illa/-illo* is strictly head-to-root, converting the root of one paradigm into that of another paradigm (for example, root *palabra* 'word' → dim. root *palabrilla*); for this reason, the plural inflection in a form like *palabrillas* 'little words' is necessarily realized outside the diminutive suffix rather than inside it: [_N [_N [_N *palabra*] *-illa*] *-s*]. The Zulu diminutive suffix *-ana* discussed in section 2 is, however, somewhat equivocal: it is definitely category-preserving but might conceivably be either head-to-root or head-to-word. If it is head-to-root, then *umfanyana* 'little boy' has the structure in (4a); if it is head-to-word, then *umfanyana* might instead have the structure in (4b).

The distinction between head-to-root rules and root-to-root rules is in many instances easily drawn. Spanish *-illa/-illo* is clearly head-to-root because it is category-preserving: it does not generally change the syntactic category of the base to which it attaches, nor the gender in case the base is a noun (*alegre* (adj.) 'merry' → dim. *alegrillo* (adj.), *tarde* (adv.) 'late' → dim. *tardecillo* (adv.), *perro* (masc.) 'dog' → dim. *perrillo* (masc.), *iglesia* (fem.) 'church' → dim. *iglesilla* (fem.)). By contrast, English *-ism* is clearly root-to-root, imposing uniformly nominal status on its derivatives regardless of the category of the corresponding base (*expression* (n.) → *expressionism* (n.), *natural* (adj.) → *naturalism* (n.)). There are, however, derivational rules whose status as root-to-root or head-to-root is not so easily determined. An example of this sort is the German diminutive suffix *-chen*. Because derivatives in *-chen* are always neuter nouns, one might initially assume that the German *-chen* rule is root-to-root; this assumption must be questioned, however, in view of the existence of plural diminutives such as *Kinderchen* (whose incidence in contemporary German is less frequent, apparently, than in earlier stages of the language; see Ettinger, 1974: 60). If the suffix *-er* in *Kinderchen* were construed as a plural inflection, then *-chen* would have to be assumed to be both transparent with respect to number and head-to-word. The latter assumption, however, is disconfirmed by the failure of *-chen* to

attach to overtly marked case forms of *Kind*, such as the dative plural: **Kindernchen* (cf. *den Kinderchen*); see Plank (1981: 27). The alternative is to construe both *Kind* and *Kinder* as uninflected bases in alternation within their paradigm – that is, to treat *-er* as a ‘stem-forming’ element in the sense of Wurzel (1970) and Lieber (1980); on this assumption, *-chen* could be viewed as attaching strictly to roots (in my sense of that term). The question then becomes: how is the alternant *Kinder* associated with the plural portion of the *Kind/Kinder* paradigm? Does it carry a morphosyntactic feature specification for plural number, or does it merely carry a morphological feature specification [+*er* alternant] which causes it to be selected as the relevant alternant by the rules of plural inflection? If the former is the case, then *-chen* is apparently transparent with respect to number in *Kinderchen*, and is therefore head-to-root; but if the latter is the case, then *-chen* might instead be root-to-root. The root-to-root analysis is favoured by the existence of compounds (such as *Kinderhäubchen* ‘child’s cap’, *Kinderlätzchen* ‘bib’, *Kinderwagen* ‘baby carriage’) in which *Kinder* does not have to be construed as carrying a plural meaning; on the other hand, interpretations such as ‘carriage for babies’ are not unimaginable. Moreover, the very fact that *Kinderchen* is plural disfavors the root-to-root analysis, on which *Kinderchen* lacks any exponent of plural number (and should therefore allow a singular interpretation as well, just as *Kindchen* ‘little child/ren’ does). This last consideration is decisive; I conclude that the root *Kinder* is specified as plural, hence that *-chen* is head-to-root. Owing to the transparency of *-chen* with respect to number, no plural inflectional suffix need be added to mark *Kinderchen* as plural – nor can one be, since *-chen* derivatives belong to a broader class of German nouns which lack inflectional suffixes in the plural. The latter fact, together with the assumption that the root *Kind* is itself unspecified for number, correctly predicts that the derivative *Kindchen* should be able to function both as a singular and as a plural.

In the framework in (23), inflectional rules, category-changing rules and category-preserving rules are not assigned to separate components, but are instead free to interact with one another to the extent allowed by the restrictions specifying the root, stem, or word status of their input and output. Thus, whereas evaluative rules are portrayed as being so peculiar as to require their own subcomponent in Scalise’s view (5), the framework in (23) portrays them as being much less peculiar: far from being assigned to a separate subcomponent, evaluative rules are instead assimilated into a broader class of category-preserving rules (which themselves do not even constitute a separate subcomponent).

From the simple assumption that evaluative rules are category-preserving rules of derivation, the framework in (23) predicts every one of the properties of evaluative rules listed in (14). Like derivational rules, evaluative rules derive the root (or some inflected member) of one lexeme’s paradigm from the root (or corresponding inflected member) of another lexeme’s paradigm;

in so far as different lexemes are associated with different meanings, this fact entails that evaluative rules change the semantics of the base to which they apply (property (14a)). As category-preserving rules, evaluative rules allow derivatives to inherit the syntactic category of their base, some or all of its feature specifications, and its status as a root or word; to the extent that the properties of their input are retained in this way, two evaluative rules defined for the same type of base should be able to apply consecutively (property (14b)) – and each should, for that matter, be able to re-apply to its own output (property (14d)). By definition, category-preserving rules preserve the syntactic category and at least one of the morphosyntactic feature specifications of the expressions to which they apply; that is, they necessarily possess properties (14e, f). Finally, category-changing rules of derivation (which are mostly root-to-root) are predicted by (23) to be applicable either before or after head-to-root rules; similarly, rules of inflection (which are mostly root-to-word) are predicted to apply either before or after head-to-word rules. Thus, unlike the conception of morphology in (5), the one proposed in (23) explains why the six properties in (14) should coincide. Moreover, it correctly predicts that they should coincide not merely in evaluative rules, but in any sort of category-preserving rule, including, for example, the Sanskrit compound-verb rule.

7. AN ADDITIONAL PROPERTY OF CATEGORY-PRESERVING RULES

The properties in (14) are, therefore, general properties of category-preserving morpholexical rules. A final property of category-preserving morphology is its tendency to interact with inflection in the following way:

- (24) *A universal tendency*: In the inflection of a root with an outermost layer of category-preserving derivation/compounding, the inflection is morphologically realized ‘inside of’ this layer, on the root’s head. (Stump, 1991)

This tendency is exemplified by evaluative forms like Southern Barasano *wiaka* ‘little house’ (plural *wi-ri-aka*) as well as by non-evaluative forms like Sanskrit *abhicar-* ‘to charm’ (third person singular imperfect active *abhy-acarat*), English *unhappy* (comparative [*un-* [*happi* -er]]; see Stump, 1991), Russian *stučat’sja* ‘to knock, hoping to be admitted’ (third person plural present *stuča-jut-sja*), Georgian *mo-ḱlav-* ‘to kill’ (*mo-m-ḱlav* ‘you will kill me’; see Bochner (1984: 412–414)), and so on; additional instances of this tendency can be enumerated at will. In all such cases, the outermost layer of category-preserving morphology is necessarily spelled out by a head-to-word rule.

Although the typology of morpholexical rules in (23) is compatible with the existence of tendency (24), it does not provide any explanation for the prevalence of this tendency; for this, a richer theory of morphology is

needed. In Stump (1991), I have argued that (24) is a special property of the relation between roots and the members of their paradigms. As I show in this section, this point of view makes it possible to provide a uniform account of all instances of tendency (24), whether the rules involved are evaluative or non-evaluative.

7.1 *A formal account of tendency (24)*

In elucidating this point of view, I have proposed that morphological rules are of two different types: morpholexical rules and paradigm functions. MORPHOLEXICAL RULES, as noted above, are the individual operations of affixation, compounding, and internal modification by which complex morphological expressions are built up from their bases; all of the rules classified in (23) are morpholexical rules of this sort. PARADIGM FUNCTIONS, by contrast, are functions which apply to the root of a paradigm to yield the fully inflected words occupying the various cells in that paradigm. To appreciate this fundamental difference between the two sorts of rules, consider the implications of this difference for a few simple examples. In English, the morpholexical rule which applies to the root *walk* to yield the past-tense form *walked* is distinct from the morpholexical rule which applies to the root *drink* to yield *drank*, but a single paradigm function links both *walk* to *walked* and *drink* to *drank*; moreover, this same paradigm function links *go* to *went*, even though there is no morpholexical rule applying to one to yield the other. Finally, a single paradigm function links the Spanish verb root *am-* 'love' to its third person singular potential form *amaría*, but three successive morpholexical rules must apply to *am-* to yield *am-ar-i-a*.

In what follows, morpholexical rules are stated in the format ' $\text{MLR}_\alpha(x) = y$ ', where x, y are morphological expressions and α is an index distinguishing MLR_α from other morpholexical rules. Despite this similarity of format, I assume that rules of inflection differ in their function from rules of derivation and compounding: whereas the latter may impose new feature specifications on their output y , the former never do, serving instead simply to realize the set of morphosyntactic feature specifications associated with a particular cell in the paradigm of their input x . For instance, whereas the derivational rule producing *widen* from *wide* assigns the syntactic category V to its output, the inflectional rule producing *widens* from *widen* simply realizes the feature specifications associated with the third person singular present tense cell in the paradigm of *widen*. (See Matthews, 1972, Anderson, 1977, 1992 and Zwicky, 1985b for arguments in favour of this 'realizational' approach to inflection.) Throughout, I shall follow the convention that if MLR_α is an inflectional rule, then the index α indicates the set of morphosyntactic feature specifications which MLR_α realizes. I further assume that a morpholexical rule ' $\text{MLR}_\alpha(x) = y$ ' may be accompanied by one or more conditions on the argument expression x ; these might require

that x carry a particular specification for some purely morphological feature, that x possess particular phonological properties, and so on.

With this format in mind, consider the following pair of morpholexical rules from Southern Barasano:

(25) *Two morpholexical rules of Southern Barasano*

(a) Inflectional rule (root-to-word):

$$\text{MLR}_{[\text{CLASS:inanimate}, \text{NUM:pl}]}([\text{N } x]) =_{\text{def}} [\text{N } [\text{N } x] \text{ -ri}]$$

(b) Category-preserving derivational rule (head-to-word):¹²

$$\text{MLR}_{\text{aka}}([\text{X } x]) =_{\text{def}} [\text{X } [\text{X } x] \text{ -aka}] \quad (\text{Head: } [\text{X } x])$$

Rule (25a) introduces the default plural suffix *-ri* for nouns in the inanimate class (Jones & Jones, 1991: 20);¹³ thus, $\text{MLR}_{[\text{CLASS:inanimate}, \text{NUM:pl}]}([\text{N } w\text{ɪ}]) = [\text{N } [\text{N } w\text{ɪ}] \text{ -ri}]$ ‘houses’. Rule (25b) introduces the diminutivizing suffix *-aka*; in accordance with (25b), $\text{MLR}_{\text{aka}}([\text{N } w\text{ɪ}]) = [\text{N } [\text{N } w\text{ɪ}] \text{ -aka}]$ ‘little house’.

Paradigm functions are stated in the format ‘ $\text{PF}_{[\sigma]}(r) = z$ ’, where r is the root of a paradigm, z is a word belonging to r ’s paradigm, and $[\sigma]$ is the complete and fully specified set of W-features realized by z . The assumption here is that every morphosyntactic feature is either a W(ORD)-FEATURE or a L(EXEME)-FEATURE: the value of a W-feature does not remain constant across all members of an inflectional paradigm; that of an L-feature does. In English, the feature of number is a W-feature; in Southern Barasano, the feature [CLASS] is an L-feature of nouns but a W-feature of verbs, which agree in class with their subject.

The (language-specific) definition of a paradigm function $\text{PF}_{[\sigma]}$ always includes a default clause according to which the value of $\text{PF}_{[\sigma]}$ for some root r is the result of applying one or more morpholexical rules to r ; for instance, in the definition of the Southern Barasano paradigm function linking nominal roots to their plurals, the default clause pertaining to the inanimate noun class can be stated as in (26).

(26) *Paradigm function for plurals in Southern Barasano (default clause)*

Where $[\text{N } x] \in [\text{CLASS:inanimate}]$,

$$\text{PF}_{[\text{NUM:pl}]}([\text{N } x]) =_{\text{def}} \text{MLR}_{[\text{CLASS:inanimate}, \text{NUM:pl}]}([\text{N } x])$$

Such default clauses can, however, be overridden in three ways. First, the value z of $\text{PF}_{[\sigma]}(r)$ may, in some circumstances, simply be listed lexically: for instance, if z is a suppletive member of r ’s paradigm, then the lexical listing of z as the value of $\text{PF}_{[\sigma]}(r)$ overrides the value that would otherwise be supplied by the default clause in the definition of $\text{PF}_{[\sigma]}$,¹⁴ and in Southern

[12] Because MLR_{aka} applies to adverbs as well as to nouns (Jones & Jones, 1991: 43), the category of the argument expression $[\text{X } x]$ is given as a variable in (25b).

[13] Because verbs agree with their subject with respect to class and number in Southern Barasano (Jones & Jones, 1991: 19, 73), both [CLASS] and [NUM] are morphosyntactic features in (25a).

[14] See Stump (1991) for additional examples of such lexically listed overrides.

Barasano, a basic collective noun such as *oho* 'bananas' is lexically listed as the value of $PF_{[NUM:pl]}([N \text{ oho}])$, overriding the value supplied by the default clause (26). Second, the value of $PF_{[\sigma]}(r)$ may sometimes be determined by an additional, overriding clause in the language-specific definition of $PF_{[\sigma]}$; an example of this sort will be seen in (40) below. Finally, when r is a complex root produced by a category-preserving rule of derivation or compounding, the default value of $PF_{[\sigma]}(r)$ may be overridden by the universal tendency in (24); given the notion of H-application defined in (27), tendency (24) can be reconstructed in theoretical terms as the H-APPLICATION DEFAULT in (28).

(27) *The H-application of $PF_{[\sigma]}$ to x ($= H_{PF_{[\sigma]}}(x)$)*

If for some morpholexical rule M , $x = M(\dots z \dots)$ and z is the head of x , then $H_{PF_{[\sigma]}}(x) = M(\dots PF_{[\sigma]}(z) \dots)$ if this is defined. ($H_{PF_{[\sigma]}}(x)$ is otherwise undefined.)¹⁵

(28) *The H-application Default*

Where $PF_{[\sigma]}$ is a paradigm function and x is a complex headed structure (i.e. is generated by a category-preserving rule of derivation/compounding), the default value of $PF_{[\sigma]}(x)$ is $H_{PF_{[\sigma]}}(x)$ if this is defined.

Thus, while the value of $PF_{[NUM:pl]}$ for *wi* 'house' defaults to *wiri*, in accordance with (26), the H-application Default predicts *wiriaka* as the value of $PF_{[NUM:pl]}$ for *wiaka* 'little house', because *wiaka* is a complex headed structure; the contrasting equations in (29) and (30) illustrate. This override of (26) by the H-application Default is guaranteed by the Elsewhere Condition, since the H-application of $PF_{[NUM:pl]}$ is defined for a proper subset of the inanimate nouns for which the default clause (26) is defined.¹⁶

$$(29) \quad PF_{[NUM:pl]}([N \text{ wi}]) = MLR_{[CLASS:inanimate, NUM:pl]}([N \text{ wi}]) = [N [N \text{ wi}] -ri]$$

$$(30) \quad PF_{[NUM:pl]}([N [N \text{ wi}] -aka]) = H_{PF_{[NUM:pl]}}([N [N \text{ wi}] -aka]) \\ = MLR_{aka}(PF_{[NUM:pl]}([N \text{ wi}])) \\ = [N [N [N \text{ wi}] -ri] -aka]$$

[15] Note that $H_{PF_{[\sigma]}}(x)$ is defined only if M is a head-to-word rule; for this reason, the ungrammaticality of dative plural **KinderInnen* follows from the assumption that *-chen* suffixation is a head-to-root rule (as argued in section 6).

[16] Singularizing morphology behaves in a parallel fashion in Southern Barasano. Thus, given the morpholexical rule in (i), which introduces the singularizing suffix *-ro* for inanimate collectives (Jones & Jones, 1991: 20), the paradigm function linking basic collective nouns to their singularized forms might have (ii) as its default clause for inanimate nouns.

(i) Inflectional rule (root-to-word):

$$MLR_{[CLASS:inanimate, NUM:sg]}([N \text{ x}]) =_{\text{def}} [N [N \text{ x}] -ro]$$

(ii) Paradigm function for singulars (default clause)

$$PF_{[NUM:sg]}([N \text{ x}]) =_{\text{def}} MLR_{[CLASS:inanimate, NUM:sg]}([N \text{ x}])$$

In accordance with (ii), the singularized form of the inanimate collective *oho* 'bananas' is correctly identified as *ohoro*; and in accordance with the H-application Default, the singularized form of the diminutive *ohoaka* 'little bananas' is correctly identified as *ohoroaka*. Note that where $[N \text{ x}]$ is a non-collective noun, the default clause in (ii) is overridden if $[N \text{ x}]$ is lexically listed as the value of $PF_{[NUM:sg]}([N \text{ x}])$.

On this approach (henceforth, the PARADIGM FUNCTION APPROACH), the morpholexical rules in (25) can be maintained in their simplest possible formulation; the fact that they define paradigms exhibiting tendency (24) is simply viewed as the effect of a universal principle – the H-application Default – on their interaction.¹⁷ In the Southern Barasano case, the H-application Default regulates the interaction of inflection with evaluative morphology; but the paradigm function approach extends without modification to cases involving non-evaluative rules of category-preserving morphology. Thus, consider the sort of analysis which this approach affords for the Sanskrit compound-verb rule discussed in section 5.

7.2 *Sanskrit compound verbs in the paradigm function approach*

I assume without argument that the morphosyntactic features relevant to Sanskrit verbal inflection are those in (31); on this assumption, the traditional categories of tense and mood in Sanskrit can be analysed into feature specifications as in (32). In addition, I assume the existence of a purely morphological feature [CLASS], whose value is an integer from 1 to 10 (corresponding to the ten traditional Sanskrit verb classes).

(31) *Morphosyntactic features of Sanskrit verbs*

FEATURE	PERMISSIBLE VALUES
[SYS]:	'pres(ent)', 'perfect', 'aorist', 'future', 'none'
[PRET]:	'yes', 'no'
[MOOD]:	'indic(ative)', 'optative', 'imperative'
[VCE]:	'act(ive)', 'middle'
[AGR]:	'1sg.', '2sg.', '3sg.', '1du.', '2du.', '3du.' '1pl.', '2pl.', '3pl.'
[VFORM]:	'finite', 'infinitive', 'participle', 'gerund'

(32) *Feature analyses of traditional categories of tense and mood in Sanskrit*

CATEGORY	FEATURE SPECIFICATIONS
Present indicative	[SYS:pres, PRET:no, MOOD:indic]
Imperfect	[SYS:pres, PRET:yes, MOOD:indic]
Optative	[SYS:pres, PRET:no, MOOD:optative]

[17] As I have stressed elsewhere (Stump, 1991), the H-application Default is a default, and may therefore be overridden or counteracted by other rules and principles. Consider, for example, the fact that while diminutive suffixes commonly appear 'outside' nominal inflections for number or gender/class, it is apparently rather unusual for them to appear outside of overt case inflections. My assumption is that this fact follows from independent properties of case inflection which may override the H-application Default. The nature of this difference between inflections for case and those for number or gender deserves further study; the fact that case inflections encode 'relational' rather than 'inherent' properties of nouns (Anderson, 1985) seems directly relevant to explaining this difference.

Imperative	[SYS:pres, PRET:no, MOOD:imperative]
Perfect	[SYS:perfect, PRET:no, MOOD:indic]
Aorist	[SYS:aorist, PRET:yes, MOOD:indic]
Precative	[SYS:aorist, PRET:no, MOOD:optative]
Future	[SYS:future, PRET:no, MOOD:indic]
Conditional	[SYS:future, PRET:yes, MOOD:indic]

Given these assumptions, consider now the third person singular imperfect active form *acarāt* of the class 1 verb *car-* ‘move’. *Acarāt* arises from the root *car-* through the attachment of three inflectional affixes: the present system suffix *-a* for class 1 verbs, the preterite prefix *a-*, and the third person singular preterite/optative agreement suffix *-t*. The morpholexical rules responsible for introducing these affixes might be formulated as in (33).

(33) *Three Sanskrit inflectional rules*

- (a) root-to-stem: $MLR_{[SYS:pres]}([_V x]) =_{def} [_V [_V x] -a]$
CONDITION: $[_V x]$ is specified [CLASS: 1]
- (b) stem-to-stem: $MLR_{[PRET:yes]}([_V x]) =_{def} [_V a- [_V x]]$
- (c) stem-to-word: $MLR_{[PRET:\alpha, MOOD:\beta, VCE:act, AGR:3sg]}([_V x]) =_{def} [_V [_V x] -t]$
CONDITION: $\alpha = \text{yes}$ or $\beta = \text{optative}$

The interaction of these three rules is regulated by the paradigm function $PF_{[\tau]}$, whose definition has (34) as its default clause; according to (34), the third person singular imperfect active form of a (class 1) verb is the result of applying rules (33a–c) in succession to that verb’s root.¹⁸ Thus, by default, $PF_{[\tau]}([_V car]) = [_V [_V a- [_V car] -a]] -t]$.

(34) *Paradigm function for third person singular imperfect active verb forms in Sanskrit (default clause)*

Where $[\tau] = [SYS:pres, PRET:yes, MOOD:indic, VCE:act, AGR:3sg, VFORM:finite]$,

$PF_{[\tau]}([_V x]) =_{def}$

$MLR_{[PRET:yes, MOOD:indic, VCE:act, AGR:3sg]}(MLR_{[PRET:yes]}(MLR_{[SYS:pres]}([_V x])))$

[18] I assume that the value of the morpholexical rule $MLR_{[SYS:pres]}$ varies according to the class of its argument; thus, (33a) is only one clause in the full definition of this rule and is operative only when the argument expression belongs to class 1.

In (34), the paradigm function $PF_{[\tau]}$ is defined directly in terms of the three morpholexical rules in (33). In Stump (1992a, b), however, I have argued that paradigms which exhibit a systematic organization of affixes into position classes are determined by paradigm function schemata defined in terms of MORPHOLEXICAL FUNCTIONS (functions which generalize over the range of morpholexical rules capable of filling the same affixal ‘slot’). Since position classes play an obvious role in the inflection of Sanskrit verbs, I assume that an optimal account would treat the paradigm function in (34) as simply one of the subcases subsumed by a much more general paradigm function schema defined in terms of morpholexical functions; see the analyses of Swahili, Fula, and Breton in Stump (1992a, b).

To account for the fact that Sanskrit compound verbs exhibit tendency (24), one need only assume that they are generated by the category-preserving rule in (35):

$$(35) \text{ A Sanskrit category-preserving rule (head-to-word)} \\ \text{MLR}_{\text{compound}}([_P x],[_V z]) =_{\text{def}} [_V [_P x]][_V z] \quad (\text{Head: } [_V z])$$

Consider, for example, the compound verb root *abhicar-* ‘to charm’, which arises from the verb root *car-* through the application of rule (35), as in (36). Because (35) is a category-preserving rule, *abhicar-* is a complex headed structure; consequently, the H-application Default determines the value of $\text{PF}_{[r]}$ for the argument *abhicar-*, as in (37).

$$(36) \text{MLR}_{\text{compound}}([_P \text{abhi}],[_V \text{car}]) = [_V [_P \text{abhi}]][_V \text{car}] \quad (\text{Head: } [_V \text{car}])$$

$$(37) \text{PF}_{[r]}([[_V [_P \text{abhi}]][_V \text{car}]]) = \text{MLR}_{\text{compound}}([_P \text{abhi}],\text{PF}_{[r]}([[_V \text{car}]]) \\ = [_V [_P \text{abhi}]][_V a- [_V \text{car}] -a]] -t])$$

As in the Southern Barasano case considered earlier, the Elsewhere Condition guarantees that the H-application Default will override the default clause in (34) in determining the value of $\text{PF}_{[r]}$ for *abhicar-*; thus, the paradigm function approach affords a uniform account of tendency (24), valid both for evaluative and non-evaluative instances of category-preserving morphology.

Note, in passing, that the H-application Default makes it possible to relate *abhicar-* to *abhyacarat* without resorting to head operations (Hoeksema, 1984; Zwicky, 1987), for example an operation which would convert the present-system stem *abhicara-* to the imperfect stem *abhyacara-* by prefixing *a-* to its head *cara-*; this account of the inflection of Sanskrit compound verbs therefore differs sharply from Anderson’s (1992: 206) account of the fully analogous problem posed by Georgian compound verbs (such as *mo-ḱlav-* ‘to kill’, *mo-m-ḱlav* ‘you will kill me’), which relies crucially on the use of head operations. As I have shown elsewhere (Stump, 1991: 692ff.), there are four reasons to prefer the H-application Default to head operations in accounting for the tendency in (24).¹⁹

[19] See Stump (1991: 692ff.) for the details of these arguments. To summarize:

1 The H-application Default correctly predicts that an expression *x* headed by *y* should be able to exhibit tendency (24) even if *y* inflects suppletively; this is because the H-application of $\text{PF}_{[r]}$ to *x* is defined even when the value of $\text{PF}_{[r]}(y)$ is simply a lexically listed one. Head operations provide no credible account of such instances of tendency (24).

2 The H-application Default is compatible with the fact that the same inflectional marking may instantiate tendency (24) in some words but not others; the theory of head operations is incompatible with this fact.

3 As a single, universal principle governing the evaluation of paradigm functions, the H-application Default (28) accounts for all instances of tendency (24) (for instance, for both Southern Barasano *wiriaka* and Sanskrit *abhyacarat*). By contrast, the theory of head operations treats (24) as a recurring property of individual, language-specific morpholexical rules (such as the head-suffixation of *-ri* in Southern Barasano, the head-prefixation of *a-* in Sanskrit) whose definitions endlessly repeat the same uncaptured generalization.

The Kikuyu diminutives considered in section 3 exhibit an interaction between inflection and category-preserving morphology which is more complicated than tendency (24), but even this more complicated interaction is accommodated by the paradigm function theory.

7.3 *Kikuyu diminutives in the paradigm function approach*

In Kikuyu, noun class prefixes are of two types: most are root-to-word inflections, as in (38a); but because the gender 12/13 prefixes can attach to forms which already carry noun class prefixes (as in (9c)), they must be word-to-word inflections, as in (38b).

(38) *Some Kikuyu inflectional rules*

(a) Root-to-word

- (i) $\text{MLR}_{[\text{GEN}:1/2, \text{NUM}:sg]}([_N x]) =_{\text{def}} [_N \text{mũ- } [_N x]]$
- (ii) $\text{MLR}_{[\text{GEN}:1/2, \text{NUM}:pl]}([_N x]) =_{\text{def}} [_N \text{a- } [_N x]]$
- (iii) $\text{MLR}_{[\text{GEN}:3/4, \text{NUM}:sg]}([_N x]) =_{\text{def}} [_N \text{mũ- } [_N x]]$
- (iv) $\text{MLR}_{[\text{GEN}:3/4, \text{NUM}:pl]}([_N x]) =_{\text{def}} [_N \text{mĩ- } [_N x]]$
- (v) $\text{MLR}_{[\text{GEN}:5/6, \text{NUM}:sg]}([_N x]) =_{\text{def}} [_N \text{i- } [_N x]]$
- (vi) $\text{MLR}_{[\text{GEN}:5/6, \text{NUM}:pl]}([_N x]) =_{\text{def}} [_N \text{ma- } [_N x]]$

(b) Word-to-word

- (i) $\text{MLR}_{[\text{GEN}:12/13, \text{NUM}:sg]}([_N x]) =_{\text{def}} [_N \text{ka- } [_N x]]$
- (ii) $\text{MLR}_{[\text{GEN}:12/13, \text{NUM}:pl]}([_N x]) =_{\text{def}} [_N \text{tũ- } [_N x]]$

In addition, the process of diminutivization comprises two distinct morpholexical rules, only one of which is category-preserving, the other being category-changing.²⁰ The category-preserving diminutive rule (39a) shifts a nominal base from gender 3/4 to gender 12/13; because it is head-to-word, it applies both to fully inflected words (e.g. *mũtĩ* ‘tree’ → dim. *-mũtĩ*; *mĩtĩ* ‘trees’ → dim. *-mĩtĩ*) and to roots (e.g. *-tĩ* ‘tree’ → dim. *-tĩ*), producing a headed structure in either case. The category-changing diminutive rule (39b), by contrast, produces unheaded gender 12/13 roots; because it is word-to-root, it applies both to fully inflected words (specifically, to class 1 singulars, such as *mũndũ* ‘person’ → dim. *-mũndũ*) and to roots (*-rima* ‘hole’ → dim. *-rima*).²¹

4 The theory of head operations forces one to assume that the applicability of a morpholexical operation to some expression *x* may be conditioned by a feature specification of *x*’s head not shared by *x*; the H-application Default allows one to reject this possibility.

[20] The idea that a process may be category-preserving in some instances but category-changing in others is independently well-motivated; see Stump (to appear c) for examples of rule ‘doublets’ comparable to (39a, b) from Mwera and English. Of course, not all category-preserving rules exist as members of a rule doublet; for instance, the Sanskrit verbal compounding rule (35) and the rule of *-aka* suffixation in Southern Barasano do not have category-changing counterparts.

[21] The condition on (39b) should, in fact, be stated less restrictively; as pointed out in footnote 6, most members of genders 11/10 and 14/6 and certain members of genders 5/6 and 9/10 also retain their singular prefix under diminutivization.

(39) *Two Kikuyu derivational rules*(a) *Category-preserving (head-to-word):*

$$\text{MLR}_{\text{diminutive.I}}([_{\text{N}[\text{GEN:3/4}]} x]) =_{\text{def}} [_{\text{N}[\text{GEN:12/13}]} x] \text{ (Head: } [_{\text{N}[\text{GEN:3/4}]} x])$$

(b) *Category-changing (word-to-root):*

$$\text{MLR}_{\text{diminutive.II}}([_{\text{N}[\text{GEN:}\alpha, \text{NUM:}\beta]} x]) =_{\text{def}} [_{\text{N}[\text{GEN:12/13}]} x]$$

CONDITION: if $[_{\text{N}} x]$ is a word (rather than a root), then $\langle \alpha, \beta \rangle = \langle 1/n, \text{sg} \rangle$

The paradigm function schema $\text{PF}_{[\text{NUM:}\alpha]}$ in (40) determines the inflected forms (singular and plural) of any given Kikuyu noun. According to the default clause (a) of schema (40), a nominal root x of gender β which bears the morphosyntactic feature specification $[\text{NUM:}\alpha]$ is inflected through the application of the morpholexical rule $\text{MLR}_{[\text{GEN:}\beta, \text{NUM:}\alpha]}$; this default pertains not only to non-diminutive nouns, but to the unheaded diminutive roots generated by the category-changing rule (39b) (that is, to diminutive roots of types (9a) and (9b)). In one class of cases, however, the default clause (40a) is overridden by a second clause in the definition of $\text{PF}_{[\text{NUM:}\alpha]}$: according to clause (40b), if x happens to be headed (as when x derives from a gender 3/4 base through the application of rule (39a)), then the number-inflected form of x is the result of applying $\text{MLR}_{[\text{GEN:}\beta, \text{NUM:}\alpha]}$ to the H-application of $\text{PF}_{[\text{NUM:}\alpha]}$ to x ; thus, the inflected singular and plural forms of diminutives of type (9c) are determined by clause (40b).

(40) *Paradigm function schema for singular and plural nouns in Kikuyu*

Where $[_{\text{N}} x] \in [\text{GEN: } \beta]$,

(a) By default: $\text{PF}_{[\text{NUM:}\alpha]}([_{\text{N}} x]) =_{\text{def}} \text{MLR}_{[\text{GEN:}\beta, \text{NUM:}\alpha]}([_{\text{N}} x])$;

(b) But: $\text{PF}_{[\text{NUM:}\alpha]}([_{\text{N}} x]) =_{\text{def}} \text{MLR}_{[\text{GEN:}\beta, \text{NUM:}\alpha]}(\text{H}_{\text{PF}_{[\text{NUM:}\alpha]}}([_{\text{N}} x]))$
if this is defined.

The paradigm function schema (40) regulates the interaction of the inflectional rules in (38) with the derivational rules in (39) in exactly the desired way, as can be seen from a few examples. Consider first the gender 3/4 nominal root $[_{\text{N}} t\bar{i}]$ 'tree' in (41a). The diminutive of this root arises from it through the application of the category-preserving rule (39a), as in (41b); note that the root $[_{\text{N}} t\bar{i}]$ and its diminutive do not differ in form, but rather only in their gender. (To avoid possible confusion in such cases, a theoretically insignificant subscript '1' will be used to indicate the non-diminutive root and a subscript '2' to indicate the corresponding diminutive root.) Because $[_{\text{N}} t\bar{i}]_2$ is headed, the H-application of $\text{PF}_{[\text{NUM:}\alpha]}$ to $[_{\text{N}} t\bar{i}]_2$ is defined; accordingly, the inflected singular and plural forms of $[_{\text{N}} t\bar{i}]_2$ are determined by clause (40b), as in (41c, d). In both cases, two number inflections are spelled out onto $[_{\text{N}} t\bar{i}]_2$, in accordance with (40b): the outer prefix is spelled out by $\text{MLR}_{[\text{GEN:12/13}, \text{NUM:}\alpha]}$ (= (38bi, ii)), while the inner prefix reflects the H-application of $\text{PF}_{[\text{NUM:}\alpha]}$ to $[_{\text{N}} t\bar{i}]_2$; because the head of $[_{\text{N}} t\bar{i}]_2$ is (by rule (39a)) the gender 3/4 root $[_{\text{N}} t\bar{i}]_1$, the inner prefix is realized by the inflectional rule $\text{MLR}_{[\text{GEN:3/4}, \text{NUM:}\alpha]}$ (= (38aiii, iv)). Note that the category-preserving rule (39a) applies to a root in deriving $[_{\text{N}} t\bar{i}]_2$ from $[_{\text{N}} t\bar{i}]_1$,

but must apply to a word (namely $\text{MLR}_{[\text{GEN:3/4, NUM:a}]}([\text{N } t\ddot{t}]_1)$) in the H-application of $\text{PF}_{[\text{NUM:a}]}$ to $[\text{N } t\ddot{t}]_2$. Facts parallel to those in (41) hold for other diminutives of type (9c).

- (41) (a) ‘tree’: $[\text{N } t\ddot{t}]_1 (\in [\text{GEN:3/4}])$; diminutive $[\text{N } t\ddot{t}]_2 (\in [\text{GEN:12/13}])$
 (b) $\text{MLR}_{\text{diminutive.I}}([\text{N } t\ddot{t}]_1) = [\text{N } t\ddot{t}]_2$ (Head: $[\text{N } t\ddot{t}]_1$)
 (c) $\text{PF}_{[\text{NUM:sg}]}([\text{N } t\ddot{t}]_2)$
 $= \text{MLR}_{[\text{GEN:12/13, NUM:sg}]}(\text{H}_{\text{PF}_{[\text{NUM:sg}]}}([\text{N } t\ddot{t}]_2))$
 $= \text{MLR}_{[\text{GEN:12/13, NUM:sg}]}(\text{MLR}_{\text{diminutive.I}}(\text{PF}_{[\text{NUM:sg}]}([\text{N } t\ddot{t}]_1)))$
 $= \text{MLR}_{[\text{GEN:12/13, NUM:sg}]}(\text{MLR}_{\text{diminutive.I}}$
 $\quad (\text{MLR}_{[\text{GEN:3/4, NUM:sg}]}([\text{N } t\ddot{t}]_1)))$
 $= [\text{N } ka- [\text{N } m\ddot{u}- [\text{N } t\ddot{t}]_1]]$
 (d) $\text{PF}_{[\text{NUM:pl}]}([\text{N } t\ddot{t}]_2)$
 $= \text{MLR}_{[\text{GEN:12/13, NUM:pl}]}(\text{H}_{\text{PF}_{[\text{NUM:pl}]}}([\text{N } t\ddot{t}]_2))$
 $= \text{MLR}_{[\text{GEN:12/13, NUM:pl}]}(\text{MLR}_{\text{diminutive.I}}(\text{PF}_{[\text{NUM:pl}]}([\text{N } t\ddot{t}]_1)))$
 $= \text{MLR}_{[\text{GEN:12/13, NUM:pl}]}(\text{MLR}_{\text{diminutive.I}}$
 $\quad (\text{MLR}_{[\text{GEN:3/4, NUM:pl}]}([\text{N } t\ddot{t}]_1)))$
 $= [\text{N } t\ddot{u}- [\text{N } m\ddot{u}- [\text{N } t\ddot{t}]_1]]$

Turn now to the gender 5/6 nominal root $[\text{N } rima]_1$ ‘hole’ in (42a). The diminutive root $[\text{N } rima]_2$ arises from $[\text{N } rima]_1$ through the application of the category-changing rule (39b), as in (42b). Because $[\text{N } rima]_2$ is unheaded, the H-application of $\text{PF}_{[\text{NUM:a}]}$ to $[\text{N } rima]_2$ is undefined. Consequently, only clause (40a) is applicable in determining the number-inflected forms of $[\text{N } rima]_2$, which therefore default to the values in (42c, d); in either case, only a single inflectional prefix is required. Facts parallel to these hold for other diminutives of type (9a).

- (42) (a) ‘hole’: $[\text{N } rima]_1 (\in [\text{GEN:5/6}])$; diminutive $[\text{N } rima]_2 (\in [\text{GEN:12/13}])$
 (b) $\text{MLR}_{\text{diminutive.II}}([\text{N } rima]_1) = [\text{N } rima]_2$
 (c) $\text{PF}_{[\text{NUM:sg}]}([\text{N } rima]_2) = \text{MLR}_{[\text{GEN:12/13, NUM:sg}]}([\text{N } rima]_2)$
 $= [\text{N } ka- [\text{N } rima]_2]$
 (d) $\text{PF}_{[\text{NUM:pl}]}([\text{N } rima]_2) = \text{MLR}_{[\text{GEN:12/13, NUM:pl}]}([\text{N } rima]_2)$
 $= [\text{N } t\ddot{u}- [\text{N } rima]_2]$

Finally, consider the gender 1/2 nominal root $[\text{N } nd\ddot{u}]$ ‘person’ in (43a), whose inflected singular form is $[\text{N } m\ddot{u}- [\text{N } nd\ddot{u}]]_1$, as in (43b). As a class 1 singular, $[\text{N } m\ddot{u}- [\text{N } nd\ddot{u}]]_1$ undergoes the category-changing rule (39b) to yield the diminutive root $[\text{N } m\ddot{u}- [\text{N } nd\ddot{u}]]_2$, as in (43c). Because $[\text{N } m\ddot{u}- [\text{N } nd\ddot{u}]]_2$ is unheaded, the H-application of $\text{PF}_{[\text{NUM:a}]}$ to $[\text{N } m\ddot{u}- [\text{N } nd\ddot{u}]]_2$ is undefined; for this reason, only clause (40a) is applicable in determining its number-inflected forms, which therefore default to the values in (43d, e); although these forms each have two inflectional prefixes, the inner one is in both cases inert, its potential syntactic relevance having been nullified by the category-changing rule (39b). Facts parallel to those in (43) hold for other diminutives of type (9b).

- (43) (a) 'person': [_N *ndũ*] (∈[GEN: 1/2]); diminutive [_N *mũ*- [_N *ndũ*]]₂
 (∈[GEN: 12/13])
 (b) $\text{MLR}_{[\text{GEN: 1/2}, \text{NUM: sg}]}([_{\text{N}} \text{ndũ}]) = [_{\text{N}} \text{mũ-} [_{\text{N}} \text{ndũ}]]_1$
 (c) $\text{MLR}_{\text{diminutive.II}}([_{\text{N}} \text{mũ-} [_{\text{N}} \text{ndũ}]]_1) = [_{\text{N}} \text{mũ-} [_{\text{N}} \text{ndũ}]]_2$
 (d) $\text{PF}_{[\text{NUM: sg}]}([_{\text{N}} \text{mũ-} [_{\text{N}} \text{ndũ}]]_2)$
 $= \text{MLR}_{[\text{GEN: 12/13}, \text{NUM: sg}]}([_{\text{N}} \text{mũ-} [_{\text{N}} \text{ndũ}]]_2)$
 $= [_{\text{N}} \text{ka-} [_{\text{N}} \text{mũ-} [_{\text{N}} \text{ndũ}]]_2]$
 (e) $\text{PF}_{[\text{NUM: pl}]}([_{\text{N}} \text{mũ-} [_{\text{N}} \text{ndũ}]]_2)$
 $= \text{MLR}_{[\text{GEN: 12/13}, \text{NUM: pl}]}([_{\text{N}} \text{mũ-} [_{\text{N}} \text{ndũ}]]_2)$
 $= [_{\text{N}} \text{tũ-} [_{\text{N}} \text{mũ-} [_{\text{N}} \text{ndũ}]]_2]$

This analysis makes two rather subtle predictions. First, because rule (39b) is defined both for inflected class 1 singulars and for gender 1/*n* roots, there should be gender 1/*n* nouns with two diminutives, one deriving from an inflected singular in *mũ*-, the other deriving from an uninflected root. Second, because rules (39a) and (39b) are both defined for gender 3/4 roots, there should be gender 3/4 nouns with two diminutives, one headed, the other unheaded. Both predictions are borne out. Barlow (1960: 260f.) observes that certain gender 1/2 nouns have two contrasting diminutives; for example, *mũ-thuri* 'elder' has both *ka-mũ-thuri* (pl. *tũ-mũ-thuri*) and *ka-thuri* (→ *gathuri*; pl. *tũ-thuri*) as diminutives. In the paradigm function analysis proposed here, *kamũthuri* is the inflected singular of the diminutive root [_N *mũ*- [_N *thuri*]]₂ (= $\text{MLR}_{\text{diminutive.II}}([_{\text{N}} \text{mũ-} [_{\text{N}} \text{thuri}]]_1)$), while *gathuri* is the inflected singular of the diminutive root [_N *thuri*]]₂ (= $\text{MLR}_{\text{diminutive.II}}([_{\text{N}} \text{thuri}]]_1)$). Barlow further observes that certain gender 3/4 nouns have two contrasting diminutives; for instance, *mũ-tĩ* 'tree' has both *ka-mũ-tĩ* (pl. *tũ-mĩ-tĩ*) and *ka-tĩ* (→ *gatĩ*; pl. *tũ-tĩ*) as diminutives. In the analysis proposed here, *kamũtĩ* is the inflected singular of the headed diminutive root [_N *tĩ*]]₂ (= $\text{MLR}_{\text{diminutive.I}}([_{\text{N}} \text{tĩ}]]_1)$), while *gatĩ* is the inflected singular of the unheaded diminutive root [_N *tĩ*]]₂ (= $\text{MLR}_{\text{diminutive.II}}([_{\text{N}} \text{tĩ}]]_1)$); the former [_N *tĩ*]]₂ is subject to clause (b) of schema (40), while the latter is subject to clause (a).²²

These Kikuyu examples exhibit an interaction between inflection and category-preserving morphology which is, in at least two respects, more complicated than that observed in the Southern Barasano and Sanskrit cases considered earlier. First, unlike the category-preserving rules (25b) and (35), the Kikuyu diminutivization rule (39a) is not affixational, but simply involves a shift in gender. Consequently, the head of an expression generated by (39a) is not a constituent of that expression; for instance, even though [_N *tĩ*]]₁ (∈[GEN: 3/4]) heads [_N *tĩ*]]₂ (∈[GEN: 12/13]) and is a constituent of $\text{PF}_{[\text{NUM: pl}]}([_{\text{N}} \text{tĩ}]]_2)$ (= [_N *tũ*- [_N *mĩ*- [_N *tĩ*]]₁]), it is not a constituent of [_N *tĩ*]]₂ itself. This is

[22] Diminutive doublets of both the *kamũthuri/gathuri* type and the *kamũtĩ/gatĩ* type are governed by a single semantic regularity (Barlow, 1960: 25, 260): in both cases, the diminutive which arises through the application of $\text{MLR}_{\text{diminutive.II}}$ to a root expresses a greater degree of diminution than the contrasting diminutive.

possible in the paradigm function approach because a paradigm function specifies a relation between the root of an inflectional paradigm and the words in that paradigm without requiring the words to come from the root through any sequence of inflectional operations.²³

A second respect in which the Kikuyu facts are more complicated than the Southern Barasano and Sanskrit facts is that the value of the Kikuyu paradigm function $PF_{[NUM:\alpha]}$ (unlike that of $PF_{[CLASS:inanimate, NUM:pl]}$ in Southern Barasano and that of $PF_{[r]}$ in Sanskrit) is never determined by the H-application Default; instead, clause (40b) overrides the H-application Default in the only class of cases in which it could possibly determine a value for $PF_{[NUM:\alpha]}$ (namely in those cases in which $PF_{[NUM:\alpha]}$ applies to a headed root generated by (39a)). It is only natural that the H-application Default should be overridden in this class of cases, since the inflected singular and plural forms of a type (9c) diminutive would otherwise be indistinguishable from those of its gender 3/4 base; for example, if the value of $PF_{[NUM:pl]}([_N \text{ } t\ddot{u}]_2)$ were determined by the H-application Default in conjunction with the default clause (40a), this value would be formally identical to that of $PF_{[NUM:pl]}([_N \text{ } t\ddot{u}]_1)$ ($= [_N \text{ } m\ddot{i}- [_N \text{ } t\ddot{u}]_1]$). By overriding the H-application Default, clause (40b) heads off this full-scale neutralization of the formal distinction between type (9c) diminutives and their non-diminutive bases.

8. CONCLUSION

In the foregoing discussion, I have argued for the following main conclusions. First, evaluative morphology is, from a cross-linguistic perspective, extremely free in its interaction with other types of derivation and with inflection; contrary to Scalise's claim (1c), evaluative rules may apply before other derivational rules and after inflectional rules. Second, evaluative rules frequently change the morphosyntactic feature content of the bases to which they apply, contrary to Scalise's claim (1f); it is nevertheless true by definition that they preserve at least one of the morphosyntactic feature specifications of the base. (Thus, the six properties (1a–f) that Scalise attributes to evaluative affixes might be revised as in (14).) Third, evaluative morphology is not peculiar in exhibiting the properties in (14) but shares these properties with a broader class of rules. Fourth, if the rules in this broader class are viewed as category-preserving rules in a system such as (23), then the fact that they share the six properties in (14) follows automatically. Fifth, category-preserving rules also share a seventh property, that of producing expressions which inflect through the inflection of their head (= tendency (24)); in and of itself, the system in (23) does not explain this tendency. Sixth, in a system

[23] It is not clear that head operations afford a comparable account of the Kikuyu facts: in order for a head operation to apply to an expression, the expression's head must be one of its constituents; but if so, then it is not evident how a head operation could get the plural $[_N \text{ } t\ddot{u}- [_N \text{ } m\ddot{i}- [_N \text{ } t\ddot{u}]_1]]$ from the root $[_N \text{ } t\ddot{u}]_2$.

in which (24) is formulated as a property of paradigm functions (that is, as the H-application Default), it is possible to account both for the extent to which category-preserving rules exhibit tendency (24) and for those instances which fail to exhibit it.

Author's address: Department of English,
University of Kentucky,
Lexington,
Kentucky 40506-0027,
USA.

REFERENCES

- Anderson, S. R. (1977). On the formal description of inflection. In Beach, W. A., Fox, S. E. & Philosoph, S. (eds.), *Papers from the thirteenth regional meeting of the Chicago Linguistic Society*. Chicago: Chicago Linguistic Society. 15–44.
- Anderson, S. R. (1985). Inflectional morphology. In Shopen, T. (ed.), *Language typology and syntactic description*, vol. III. Cambridge: Cambridge University Press. 150–201.
- Anderson, S. R. (1992). *A-morphous morphology*. Cambridge: Cambridge University Press.
- Baksi, S. (1992). Derivation inside inflection: counterexamples from Bengali. Paper presented at the Linguistic Society of America annual meeting, Philadelphia, Pennsylvania.
- Barlow, A. R. (1960). *Studies in Kikuyu grammar and idiom*. Edinburgh: Foreign Mission Committee of the Church of Scotland.
- Bennett, P. R., Biersteker, A., Gikonyo, W., Hershberg, S., Kamande, J., Perez, C. & Swearingen, M. (1985). *Gĩkũyũ nĩ kĩoigĩre: Essays, texts, and glossaries*. Madison: African Studies Program of the University of Wisconsin-Madison.
- Bochner, H. (1984). Inflection within derivation. *The Linguistic Review* 3. 411–421.
- Brückner, T. & Sauter, C. (1984). *Rückläufige Wortliste zum heutigen Deutsch*, vol. II. Mannheim: Institut für Deutsche Sprache.
- Carstairs-McCarthy, A. (1992). *Current morphology*. London and New York: Routledge.
- Di Sciullo, A. M. & Williams, E. (1987). *On the definition of word*. Cambridge, MA: MIT Press.
- Doke, C. M. (1930). *Textbook of Zulu grammar*, 6th edn. Cape Town: Maskew Miller Longman.
- Dzokanga, A. (1979). *Dictionnaire lingala-français, suivi d'une grammaire lingala*. Leipzig: Verlag Enzyklopädie Leipzig.
- Ettinger, S. (1974). *Form und Funktion in der Wortbildung: die Diminutiv- und Augmentativmodifikation im Lateinischen, Deutschen und Romanischen*. Tübingen: Tübinger Beiträge zur Linguistik.
- Gooch, A. (1967). *Diminutive, augmentative and pejorative suffixes in modern Spanish*. Oxford: Pergamon Press.
- Hoeksema, J. (1984). *Categorical morphology*. University of Groningen doctoral dissertation. [Published 1985, New York: Garland.]
- Jaeggli, O. A. (1980). Spanish diminutives. In Nuessel, F. H., Jr (ed.), *Contemporary studies in Romance languages*. Bloomington: Indiana University Linguistics Club. 142–158.
- Jones, W. & Jones, P. (1991). *Barasano syntax* (Studies in the Languages of Colombia 2). Arlington, TX: Summer Institute of Linguistics and University of Texas, Arlington.
- LeSourd, P. S. (1992). Inflection inside derivation in Passamaquoddy. Paper presented at the Linguistic Society of America annual meeting, Philadelphia, Pennsylvania.
- Lieber, R. (1980). On the organization of the lexicon. MIT doctoral dissertation. [Distributed 1981, Indiana University Linguistics Club, Bloomington.]
- Lieber, R. (1989). On percolation. In Booij, G. & van Marle, J. (eds.), *Yearbook of morphology* 2. Dordrecht: Foris. 95–138.
- Malicka-Kleparska, A. (1985). Parallel derivation and lexicalist morphology: the case of Polish diminutivization. In Gussmann, E. (ed.), *Phono-morphology: studies in the interaction of phonology and morphology*. Lublin: Redakcja Wydawnictw Katolickiego Uniwersytetu Lubelskiego.
- Masica, C. (1976). *Defining a linguistic area*. Chicago: University of Chicago Press.

- Matthews, P. H. (1972). *Inflectional morphology: a theoretical study based on aspects of Latin verb conjugation*. Cambridge: Cambridge University Press.
- Merrifield, W. R., Naish, C. M., Rensch, C. R. & Story, G. (1974). *Laboratory manual for morphology and syntax*, rev. edn. Huntington Beach, CA: Summer Institute of Linguistics.
- Monier-Williams, Sir M. (1899). *A Sanskrit-English dictionary*. 1984 reprint. Delhi: Motilal Banarsidass.
- Mufwene, S. S. (1980). Bantu class prefixes: inflectional or derivational? In Kreiman, J. & Ojeda, A. E. (eds.), *Papers from the Sixteenth Regional Meeting, Chicago Linguistic Society*. Chicago: Chicago Linguistic Society, 246-258.
- Palmer, F. R. (1962). *The morphology of the Tigre noun*. London: Oxford University Press.
- Perlmutter, D. (1988). The split morphology hypothesis: evidence from Yiddish. In Hammond, M. & Noonan, M. (eds.), *Theoretical morphology: approaches in modern linguistics*. San Diego: Academic Press. 79-100.
- Plank, F. (1981). *Morphologische (Ir-)Regularitäten*. Tübingen: Gunter Narr.
- Plank, F. (1985). On the reapplication of morphological rules after phonological rules and other resolutions of functional conflicts between morphology and phonology. *Linguistics* 23. 45-82.
- Rice, K. (1985). On the placement of inflection. *LIn* 16. 155-161.
- Scalise, S. (1986). *Generative morphology*, 2nd edn. Dordrecht: Foris.
- Scalise, S. (1988). The notion of 'head' in morphology. In Booij, G. & van Marle, J. (eds.), *Yearbook of morphology* 1. Dordrecht: Foris. 229-245.
- Selkirk, E. O. (1982). *The syntax of words*. Cambridge, MA: MIT Press.
- Smith, R. D. (1973). Southern Barasano grammar (Language Data Microfiche AM3). Dallas: Summer Institute of Linguistics.
- Stahl, F. A. & Scavnick, G. E. A. (1973). *A reverse dictionary of the Spanish language*. Urbana: University of Illinois Press.
- Stump, G. T. (1989). A note on Breton pluralization and the Elsewhere Condition. *Natural Language and Linguistic Theory* 7. 261-273.
- Stump, G. T. (1990). Breton inflection and the split morphology hypothesis. In Hendrick, R. (ed.), *The syntax of the modern Celtic languages* (Syntax and Semantics 23). San Diego: Academic Press. 97-119.
- Stump, G. T. (1991). A paradigm-based theory of morphosemantic mismatches. *Lg* 67. 675-725.
- Stump, G. T. (1992a). On the theoretical status of position class restrictions on inflectional affixes. In Booij, G. & van Marle, J. (eds.), *Yearbook of morphology 1991*. Dordrecht: Kluwer. 211-241.
- Stump, G. T. (1992b). Position classes and morphological theory. In Booij, G. & van Marle, J. (eds.), *Yearbook of morphology 1992*. Dordrecht: Kluwer. 129-180.
- Stump, G. T. (to appear a). Two types of mismatch between morphology and semantics. In Schiller, E. (ed.), *Developments in autolexical syntax*. The Hague: Mouton.
- Stump, G. T. (to appear b). La morphologie bretonne et la frontière entre la flexion et la dérivation. *La Bretagne linguistique* 6.
- Stump, G. T. (to appear c). The adjacency condition and the formation of diminutives in Mwera and Kikuyu. *Berkeley Linguistics Society* 18.
- Szymanek, B. (1988). *Categories and categorization in morphology*. Lublin: Redakcja Wydawnictw Katolickiego Uniwersytetu Lubelskiego.
- Trépos, P. (1957). *Le pluriel breton*. Brest: Emgleo Breiz.
- Whitney, W. D. (1889). *Sanskrit grammar*, 2nd edn. Cambridge, MA: Harvard University Press.
- Wierzbicka, A. (1980). *Lingua mentalis: the semantics of natural language*. Sydney: Academic Press.
- Williams, E. (1981). On the notions 'lexically related' and 'head of a word'. *LIn* 12. 245-274.
- Williams, S. J. (1980). *A Welsh grammar*. Cardiff: University of Wales Press.
- Wurzel, W. U. (1970). *Studien zur deutschen Lautstruktur* (Studia Grammatica VIII). Berlin: Akademie-Verlag.
- Zwicky, A. M. (1985a). Heads. *JL* 21. 1-30.
- Zwicky, A. M. (1985b). How to describe inflection. *Berkeley Linguistics Society* 11. 372-386.
- Zwicky, A. M. (1987). Transformational grammarians and their ilk. *MITWPL* 9. 265-279.