

## 4 Formal representation

### 4.1 Introduction

It is a generally shared assumption that any adequate formal model of morphology ought to take some account of inflectional syncretism. Most investigators who have addressed syncretism overtly have taken this assumption one step further: it is not enough to describe syncretism, one should also constrain it. This goal is motivated by two factors. First, syncretism is something of an aberration: by default we assume a one-to-one relationship between morphosyntactic function and form, and syncretism is a violation of this assumption (Carstairs 1987). Second, syncretism displays preferred patterns, as we have seen throughout Chapter 3.

Ultimately, the morphological description of a particular syncretism must contain two elements: (i) a list of the set of values which are syncretic, and (ii) a way of associating this set with a form. To a large extent, constraints on syncretism are a product of how these elements are treated. For example, the syncretic set may be a natural class of values or simply a stipulated disjunction, while the form itself may be defined over the whole set, or defined in terms of one of the constituent members. In §4.2 below we examine the inherent properties of different rule types, and in §4.3 we see how these have been employed in particular accounts of syncretism.

### 4.2 Defining sets of values

#### 4.2.1 Natural classes

Probably the most common approach to syncretic sets of values is to treat them as a reflection of underlying feature structure. That is, feature values are themselves composed of more basic sub-values, which can be grouped into natural classes (a view first formalized by Bierwisch 1967). Given a particular model of feature structure, one can predict what will be the possible and impossible patterns of syncretism. Three basic types of feature structure

are possible: (i) flat, (ii) hierarchical and (iii) cross-classifying; the last term is taken from Johnston (1997).

While cross-classifying feature structure is, in principle, unlimited in what it can describe, flat and hierarchical feature structures have some inherent restrictions. Therefore it will be revealing to contrast what can and cannot be described by these two models. As an illustration we use two examples of gender syncretism, from the Atlantic (Niger-Congo) language Noon and the non-Pama-Nyungan Australian language Gaagudju, which reveal both the power and the limitations of the two models of feature structure.

Noon distinguishes seven genders (see (1)). They are all distinct in the singular, and show a convergent pattern in the plural (see Chapter 3: §3.4.2): genders 1, 2 and 3 are syncretic, and genders 4, 5 and the diminutive gender are syncretic.

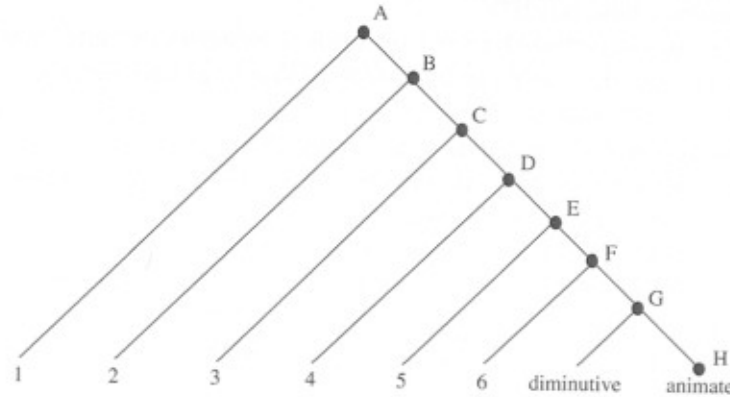
(1) Noon gender (Soukka 2000: 66)

	singular modifier	plural modifier
1	w-	c-
2	f-	c-
3	m-	c-
4	k-	t-
5	p-	t-
diminutive	j-	t-
animate	y-	ɸ-

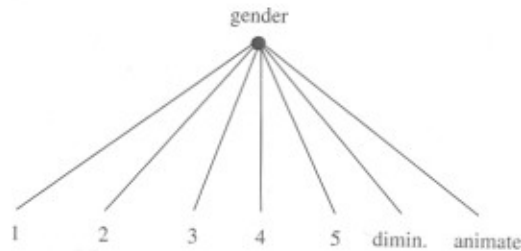
The Noon paradigm can be easily described using hierarchical feature structure such as in (2), made up of binary branching nodes, which have been given the arbitrary labels A–H. Syncretism of genders 4, 5 and the diminutive can be accounted for by a rule which associates the prefix *t-* with node D, assuming that the animate form is itself overtly defined. Syncretism of genders 1, 2 and 3 follows if the prefix *c-* is associated with node A; that is, it is the general default. (Other orderings of the genders in this hierarchical structure are also possible.)

Flat feature structure is illustrated in (3). This cannot be used to model gender syncretism in Noon. The only locus for rules other than the daughter nodes is the single mother node ('gender'), which will allow us to describe one instance of syncretism (as an 'elsewhere' form), but not two.

(2) Hierarchical model of feature structure in Noon



(3) Flat model of feature structure in Noon



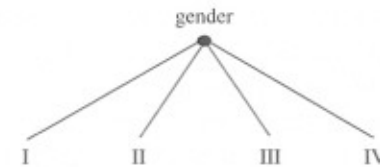
The reverse situation is presented by the Gaagudju paradigms in (4), repeated here from Chapter 3 (§3.4.3), where a flat feature structure will work, but not a hierarchical one.

(4) Gaagudju gender (Harvey 2002: 144, 157, 224-5)

	adjectives		pronoun	realis verbs	
	first declension	second declension		present (intransitive subject)	present and unmarked tense object with first person subject
I (male)	Ø	na-	naawu	Ø	arra-
II (female)	njiN-	njiN-	ngaayu	nj-dja-	nji-rra-
III (plant)	ma-	naN-	ngaayu	ma-ya-	ma-ra-
IV (residue)	gu-	naN-	ngaayu	nj-dja-	arra-

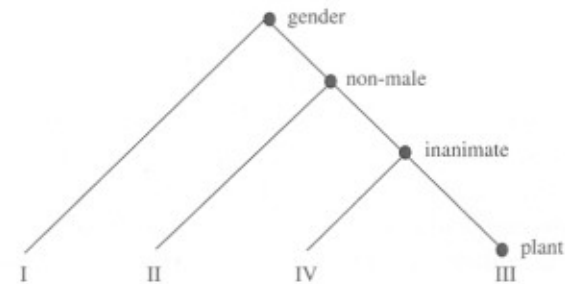
By assuming the flat feature structure in (5), all the patterns can be described by simple underspecification. That is, the non-syncretic forms are fully specified for gender, while the syncretic forms *naN-*, *ngaayu*, *nj-dja-* and *arra-* are 'elsewhere' forms, unspecified for gender, and so are used wherever there is no more specific form.

(5) Flat model of feature structure in Gaagudju



Now let us see how this might be represented with a hierarchical feature structure, consisting of binary branching nodes as suggested above for Noon. Example (6) represents what seems to be a plausible arrangement of values; for convenience, we can label the node which joins III and IV as 'inanimate', and the node which joins II, III and IV as 'non-male'.

(6) Hierarchical model of feature structure in Gaagudju



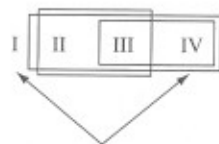
By simply underspecifying for lower nodes, we can describe the patterns found in the nominal word classes: III/IV syncretism results from a rule specifying an 'inanimate' form, while II/III/IV syncretism results from a rule specifying a 'non-male' form. This accounts for the nested pattern that these syncretisms display, since each higher node subsumes the ones underneath. This structure can also be used to describe one of the patterns found with verbs, namely the syncretism of genders II and IV found in the present tense intransitive subject forms. This will result if the inanimate node is left unspecified, as illustrated in (7).

(7)

node	form
gender	Ø
non-male	nj-dja
plant	ma-ya-

However, this accounts for only one of the two syncretic patterns found with verbs; I/IV syncretism cannot be accommodated with this hierarchy. Only values which are adjacent on the hierarchy can be described as syncretic, since any unspecified value will default down the hierarchy to the next most specific value. This translates into a graphic rule of thumb: there is a single linear order of values, and only values which are adjacent can be described as syncretic (Chvany 1986, Johnston 1997). In this case, no single linear order will bring all the syncretic values adjacent to each other; the order in (8), which accommodates most of the patterns, still leaves genders I and IV separated from each other:

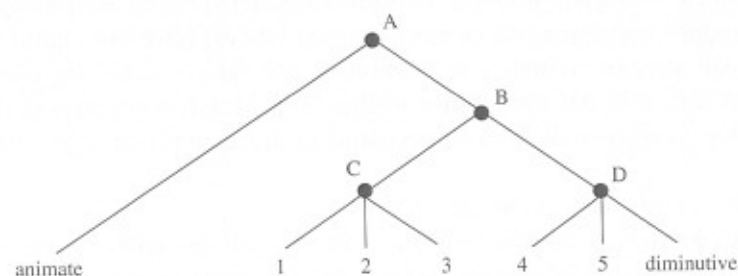
(8)



Thus, we have seen the constraints inherent in the two models. If feature structure is construed as flat, there can be only one syncretic form per paradigm, namely the elsewhere form. Hierarchical feature structure allows multiple syncretisms within a single paradigm but restricts the number of ways that feature values may be combined in different paradigms. Of course, hybrid structures are possible as well. For example, one could recast the model of Noon gender along the lines of (9), where nodes A, B and C/D constitute a hierarchy, while the structure beneath nodes C and D is flat. Such a hybrid model simply combines the properties of hierarchical and flat feature structure and does not add any new descriptive potential.

Cross-classifying feature structure, by contrast, is potentially unconstrained. For example for Gaagudju we might posit a system of four feature values: 'non-male', 'inanimate', and two additional values, which we can provisionally term 'value x' and 'value y'. The individual gender values can thus be portrayed as composites of these four sub-values, as shown in (10).

(9) Hybrid model of feature structure in Noon



The individual syncretic patterns result from rules which make reference to these component values. The number of syncretic patterns that can be described is constrained only by the number of values employed, which is not subject to any inherent limit.

(10)

	non-male	inanimate	value x	value y
I				+
II	+		+	
III	+	+		
IV	+	+	+	+

#### 4.2.2 *Unnatural classes*

The other approach to defining syncretic classes of values is simply to stipulate them. The resulting set of values thus represents an unnatural class, in that its members share no common feature other than subjection to that stipulation; a recent work employing this approach within Lexical-Functional Grammar is Dalrymple and Kaplan (2000). Obviously, such a technique can describe any possible set of values. In practice, the full power of stipulation is seldom employed; most investigators impose some constraints, whether overt or covert. For example, Brown (1998b: 87) requires that the values be of the same feature or features, e.g. {nominative, accusative} or {second person singular, first person plural}. Such a restriction seems to be tacitly in place for some other approaches which employ unnatural classes, e.g. Stump (2001) or Zwicky (2000).

A somewhat less direct way of stipulating sets has emerged in Optimality Theory. For example, in Kiparsky (2001), the syncretism of genitive and accusative in singular nouns in Finnish is accounted for by morphological markedness constraints which block the use of the expected case endings for the realization of an underlying accusative. Instead, an underlying accusative is forced to use the genitive ending. Thus, the constraints and their ranking conspire to define a set consisting of the accusative and genitive.

#### 4.2.3 A note on polarity effects

In the preceding sections we have concentrated on syncretic patterns confined to values of a single feature. Polarity effects represent a special problem: since they involve combinations of values which are not directly related in terms of feature structure, it would appear at first glance that they could only be described by overt stipulation. However, some investigators have proposed that inflectional rules can make reference to abstract properties of feature structure, which allow some polarity effects to be systematically represented in featural terms. The crucial notion here is markedness: as Serzisko notes, some polarity effects can be described in terms of markedness (1982: 194–6). For example, the default system of gender-number marking in Somali (11a) can be viewed in terms of markedness coordination (11b): *k-* is used where the markedness values of both features is the same, and *t-* is used where the values differ, on the assumption that feminine and plural are the marked values.

(11)

a.			b.		
	SG	PL		unmarked	marked
M	k-	t-	unmarked	U/U	U/M
F	t-	k-	marked	M/U	M/M

(based on Serzisko 1982: 185, 195)

If the features are construed as being hierarchically structured, the values break down as in (12a); if cross-classifying, they break down as in (12b).

Both models now lend themselves to a more abstract representation using variables. With hierarchical features, the feature itself is made a variable (13a), with cross-classifying features it is the  $\pm$  value which is made a variable (13b).

(12)

a. hierarchical		b. cross-classifying	
feature structure		feature structure	
M SG		M SG	- F - PL
F SG	+F	F SG	+ F - PL
M PL	+PL	M PL	- F + PL
F PL	+F +PL	F PL	+ F + PL

(13)

a. hierarchical		b. cross-classifying	
abstract feature structure		abstract feature structure	
M SG		M SG	$\alpha$ F $\alpha$ PL
F SG	$+\alpha$	F SG	$\alpha$ F $-\alpha$ PL
M PL	$+\alpha$	M PL	$\alpha$ F $-\alpha$ PL
F PL	$+\alpha$ $+\alpha$	F PL	$\alpha$ F $\alpha$ PL

The structure in (13a) now allows us to describe *t-* as the form which represents a single degree of markedness ( $+\alpha$ ), while *k-* is an elsewhere form (such an argument is advanced by Béjar and Hall 1999). The structure in (13b) allows both forms to be explicitly described: *k-* is the form used where the  $\pm$  value for both features matches ( $\alpha$ F  $\alpha$ PL), and *t-* is used where they do not match ( $\alpha$ F  $-\alpha$ PL).

Thus, if the use of variables is allowed, some instances of polarity can be attributed to feature structure. However, as pointed out in Chapter 3 (§3.7), it is doubtful whether many examples can be profitably seen in terms of neat markedness relationships.

#### 4.3 Symmetrical versus directional rules

As we have defined it, syncretism involves a set of values associated with a single form. Given this definition, the question of how this association is effected remains open. In principle, there are two options: (i) the form is associated with the set as a whole, as in the schematic rule in (14a), or

(ii) the form is associated with one of the component values and is 'borrowed' by the other members of the set, as in the schematic rule in (14b).

- (14) a. there is a set of values {a, b} which have the form *x*  
 b. there is a set of values {a, b} which have the same form; the form of *a* is *x*

It will be useful (borrowing the terminology of Stump 2001) to distinguish these as 'symmetric' rules (14a) versus 'directional' (14b) rules. On the face of it, symmetric rules are conceptually simpler, since they have the same structure as an 'ordinary' morphological rule: there is an element in morphosyntax which is directly associated with a form. Directional rules, by contrast, entail a two-step process. The most familiar breed of directional rule is the 'rule of referral' (Zwicky 1985). In describing (14b) above, a rule of referral would state that the form associated with the value *b* is the same as the form associated with the value *a* (that is, *b* refers to *a* for its form). One of the main reasons for assuming directional rules is to account for directional effects, that is those contexts where the syncretic form looks as if it is 'belongs' to one of the component values, numerous examples of which have been seen in the previous sections (especially involving case and person).

However, it has been argued that directional effects can be described without directional rules, so that, for reasons of formal economy, they should be rejected. We can illustrate a directional analysis, as well as a non-directional counterproposal, with a familiar example from Latin, shown in (15). Nominative and accusative are syncretic in neuter nouns and distinct in masculine nouns (at least in the singular). In the singular of the second declension, the form taken by the syncretic nominative/accusative of the neuters, *-um*, is the same as that of the distinct accusative case of the masculines.

(15) Latin second declension

	neuter 'war'		masculine 'slave'
NOM SG	bell-um		serv-us
ACC SG	bell-um	←	serv-um
GEN SG	bell-i		serv-i
DAT SG	bell-ō		serv-ō
ABL SG	bell-ō		serv-ō

Thus, it *looks* as if the neuter nominative singular has taken the form of the accusative. Using a directional rule, this apparent 'borrowing' can be incorporated directly in the analysis. First, one can assume two general rules that apply to all second declension nouns: the nominative singular ending is *-us* (16a), and the accusative singular ending is *-um* (16b). For neuters, there is a rule stating that the nominative singular takes the form of the accusative (16c).

- (16) a. NOM SG = stem + -us  
 b. ACC SG = stem + -um  
 c. NOM SG in neuter = ACC SG

Because the domain of the rule in (16c) is more specific than the domain of the rule in (16a), in that it additionally contains reference to gender, the rule in (16c) takes precedence by Panini's principle (otherwise known as the 'elsewhere condition', 'blocking' and the 'Subset principle' – we will use the name 'Panini's principle').

The morphological description above contains two rule types, one which associates a morphosyntactic value with a form (16a, b), and one which associates one morphosyntactic value with another (16c). In the terminology introduced by Zwicky (1985), the former type is a 'rule of exponence', the latter a 'rule of referral'. Rules of exponence state the relationship between a morphosyntactic value and a form, while rules of referral state the relationship between morphosyntactic values.

Some linguists have suggested that rules of referral are unnecessary and should be dispensed with for reasons of formal economy. Thus, Zwicky (2000) suggests that all syncretism can be described as symmetrical syncretism, with directional effects derived as a by-product of underspecification. We can illustrate his proposal with the same Latin data from (15). First, declare that nominative and accusative singular form a class, which is assigned the index 'X' (17a). This class is associated with the ending *-um* (17b). In (17c) a more specific rule is introduced, stating that the nominative singular of the masculines has the ending *-us*, which takes precedence over the rule in (17b) by Panini's principle.

- (17) a. {NOM SG ∪ ACC SG} = X  
 b. X = stem + -um  
 c. NOM SG in masculine = stem + -us

Thus, under a **symmetrical** analysis, the specifically nominative singular masculine ending *-us* is opposed to the default nominative/accusative



ending *-um*.<sup>1</sup> What looks like the spread of the accusative form to the nominative is simply the emergence of the unmarked form.

This alternative analysis will work for examples of what Stump (2001) calls **unidirectional** syncretism, that is directional syncretism where the directional effect seems to move in only one direction (accusative → nominative in the above example). However, Stump (2001) identifies another type, **bidirectional** syncretism, where the directional effect seems to move in two directions. This does not readily lend itself to the same analysis. It will be useful here to distinguish between two types, which we will call convergent bidirectional syncretism and divergent bidirectional syncretism, to be defined below. Each one presents a distinct problem for Zwicky's model.

#### 4.3.1 Convergent bidirectional syncretism

Under convergent bidirectional syncretism, there is a feature value *x* which takes the form associated with feature value *y* in some contexts, and in other contexts takes the form associated with feature value *z*. Some examples have already appeared in Chapter 3, involving the accusative in Russian and in Bonan, and the ergative in Lak (all in §3.1.2) and the second person singular in Gujarati (§3.2.3). Bonan presents an especially clear and straightforward example, and this is what we analyse below. Recall that in Bonan (the paradigms are given again in (18)), the accusative case does not have a distinct form: in nouns it is syncretic with the genitive, while in pronouns it is syncretic with the dative-locative (a single case in Bonan).

(18) Bonan (Todaeva 1997: 35)

	noun 'foliage'		pronoun 'he'
NOM	labčəŋ-Ø		ndžəŋ-Ø
GEN	labčəŋ-ne	←	ndžəŋ-ne
ACC	labčəŋ-ne		ndžəŋ-de
DAT-LOC	labčəŋ-de	→	ndžəŋ-de
ABL	labčəŋ-se		ndžəŋ-se
INS-COM	labčəŋ-gale		ndžəŋ-gale

<sup>1</sup> One could construe the arbitrary class 'X' as some kind of natural class, e.g. 'direct case', but this does not affect the argument.

Seen in directional terms, it looks as if the accusative takes the form of the genitive in nouns, while in pronouns it takes the form of the dative-locative. The following represents a possible description using directional rules. There are two rules of referral, shown in (19). In nouns, the accusative takes the form of the genitive (19a). With pronouns, the accusative takes the form of the dative-locative (19b).

- (19) a. ACC in nouns = GEN  
b. ACC in pronouns = DAT-LOC

The relevant rules of exponence are shown in (20); note that no accusative forms are defined, because these are derived by the rules of referral in (19)

- (20) a. NOM = stem + -Ø  
b. GEN = stem + -ne  
c. DAT-LOC = stem + -de  
d. ABL = stem + -se  
e. INS-COM = stem + -gale

The interaction of the rules of referral with the rules of exponence is graphically represented in (21). In nouns, the rule of referral in (19a) causes the form of the genitive to be extended to the accusative, while in pronouns, the rule of referral in (19b) causes the form of the dative-locative to be extended to the accusative.

(21)

noun 'foliage'	pronoun 'he'
NOM = labčəŋ-Ø	NOM = ndžəŋ-Ø
GEN = labčəŋ-ne	GEN = ndžəŋ-ne
ACC =	ACC =
DAT-LOC = labčəŋ-de	DAT-LOC = ndžəŋ-de
ABL = labčəŋ-se	ABL = ndžəŋ-se
INS-COM = labčəŋ-gale	INS-COM = ndžəŋ-gale

Now let us see how we might describe the same phenomenon without directional rules. The syncretisms are represented in (22) as the classes 'X' and 'Y'. In (23), these symmetrical rules define the syncretic forms.

- (22) a. {ACC ∪ GEN} = X  
b. {ACC ∪ DAT-LOC} = Y

- (23) a.  $X = \text{stem} + \text{-ne}$   
 b.  $Y = \text{stem} + \text{-de}$

Obviously, this is an incomplete description, because nothing yet has been said about the difference between nouns and pronouns. As it stands, the rules for X and Y conflict for the definition of the accusative form. This conflict is not resolved by Panini's principle, because neither rule is more specific.

Two options are available for clarifying the distribution of X and Y. One would be to incorporate rule ordering, with nouns and pronouns exhibiting different ordering for the rules involving X and Y, as sketched in (24): the rule for X precedes the rule for Y in nouns, while the rule for Y precedes the rule for X in pronouns.

(24)

<i>rule ordering for nouns</i>	<i>rule ordering for pronouns</i>
i. $X = \text{stem} + \text{-ne}$	i. $Y = \text{stem} + \text{-de}$
ii. $Y = \text{stem} + \text{-de}$	ii. $X = \text{stem} + \text{-ne}$

In each case, the rule conflict is resolved in favour of the prior rule. An obvious objection to this approach is that it substitutes one formal device (rule ordering) for another (rules of referral). Whether this is a serious problem depends on the status one gives to rule ordering; for example, in approaches such as Stump's (2001) Paradigm Function Morphology and Corbett and Fraser's Network Morphology (1993), rule ordering is absent.

The other possibility would be to incorporate information about the lexical class within the set of syncretic values (thanks to Jonathan Bobaljik for pointing out this option). In (25), the accusative is specified as nominal or pronominal.<sup>2</sup>

<sup>2</sup> Of course, one could leave one of these rules underspecified for lexical class; the argument remains the same, though, since at least one rule will have to incorporate reference to lexical class.

(25) *revision of (22)*

- a.  $\{\text{ACC noun} \cup \text{GEN}\} = X$   
 b.  $\{\text{ACC pronoun} \cup \text{DAT-LOC}\} = Y$

Technically, this would yield the correct output, but such rules seem to hold to the letter but not the spirit of a symmetrical analysis, in that they encode an obvious asymmetry. For example, (25a) states that form X serves by default for the genitive, and for one class of lexemes it is also used for the accusative. In its own fashion, this states that form X is primarily a genitive form, and secondarily an accusative form.

In summary, the existence of convergent bidirectional syncretism makes certain demands on a model of morphology: they require rule ordering or directional rules (or something very much like them).

#### 4.3.2 *Divergent bidirectional syncretism*

As we have seen above, symmetrical rules can be used to describe convergent directional syncretism, provided other elements in the morphological model comply. As for *divergent* bidirectional syncretism, symmetrical rules simply cannot be used to describe it in any systematic fashion. Under divergent bidirectional syncretism, there is a feature value  $x$  which takes the form associated with feature value  $y$  in some contexts, while in other contexts  $y$  takes the form associated with  $x$ . For an illustration, we can return to the Latin example from (15), adding further data as shown in (26).

In addition to the default masculine and neuter types of the second declension, there are a few nouns (the most prominent being *vulgus* 'crowd', *vīrus*, 'poison' and *pelagus* 'sea') which display an accusative in *-us* (Neue and Wagener 1902: 972).<sup>3</sup> If we include these nouns in the picture,

<sup>3</sup> The origin of this type is mixed. *Pelagus* is borrowed from the Greek *s*-stem *pelagos*, where *-os* is the final part of the stem, and not an inflectional ending. Clearly, however, when borrowed into Latin, it was interpreted as an ending, since *pelagus* was assigned to the second declension (with the ending *-us*), and not to the third declension *s*-stem type, where *-us* is instead the stem-final element (e.g. *genus* 'nation, race' and *corpus* 'body', where stem-final *-s* is realized as *-r* when followed by endings, as in the genitive singular forms *gener-is*, *corpor-is*). This justifies our treatment of the *-us* in *pelagus* and the *-us* in *servus* as representing the same ending. Other borrowings from Greek *s*-stems followed this pattern on occasion, such as *cētus* 'large sea animal, whale' and *chaos* 'chaos' (Neue and Wagener 1902: 502–4). *Vulgus* and *vīrus* are native Latin items, and the origin of their exceptional declension is not known.

## (26) Latin second declension

	default neuter 'war'		default masculine 'slave'		accusative in <i>-us</i> 'crowd'
NOM SG	bell-um		serv-us	→	vulg-us
ACC SG	bell-um	←	serv-um		vulg-us
GEN SG	bell-i		serv-i		vulg-i
DAT SG	bell-ō		serv-ō		vulg-ō
ABL SG	bell-ō		serv-ō		vulg-ō

then the Latin second declension is not simply an example of unidirectional syncretism, but rather has two mirror-image patterns: in the default neuter type, the nominative looks like the accusative, and in the small class represented by *vulgus*, the accusative looks like the nominative.

Using directional rules, this sort of pattern does not differ in principle from unidirectional syncretism. To the rules from (16) we simply add a fourth rule (27d), stipulating that the accusative takes the form of the nominative for this small class.

- (27)
- NOM SG = stem + -us
  - ACC SG = stem + -um
  - NOM SG in neuter = ACC SG
  - ACC SG in 'vulgus' type = NOM SG

For symmetrical rules, divergent bidirectional syncretism imposes more constraints than does convergent bidirectional syncretism. Rule ordering is no longer an option, because the same values are syncretic both in the neuters and in the 'vulgus' type. For example, in (28) we represent the

This type is also defective, lacking plural forms, except for the occasional *pelagē*, whose ending is transparently Greek, unincorporated into the Latin declensional system. All of these nouns show a tendency to be reinterpreted as masculine nouns of the *servus* type, with nominative *-us* and accusative *-um*. One interesting variation occurs in Late Latin (sixth century), where *pelagus* is reinterpreted as masculine without altering its declension pattern: the example *fiurentem pelagus* 'raging sea' (from the *Variae* of Cassiodorus, cited in Neue and Wagener (1902: 503)) has the agreeing participle with the non-syncretic masculine accusative ending *-em*. This shows that nominative/accusative syncretism in the singular was not necessarily tied to neuter gender.

syncretic nominative/accusative forms, using the index 'X' to represent {NOM SG ∪ ACC SG}.

- (28)
- {NOM SG ∪ ACC SG} = X
  - X in neuter = stem + -um
  - X in 'vulgus' type = stem + -us

But what about masculines, which require both *-us* and *-um* endings? The description of a masculine noun would need some version of both rule (28b) and (28c). In (29) we show what these rules would look like with reference to the masculine declension added.

- (29) *Revision of (28)*
- {NOM SG ∪ ACC SG} = X
  - X in {neuter ∪ masculine} = stem + -um
  - X in {'vulgus' type ∪ masculine} = stem + -us

But this is unworkable: rules (29b) and (29c) conflict within the masculine declension. Rule ordering cannot resolve this, because either rule would bleed the other completely.

The only way a symmetrical analysis can represent this pattern is to treat some aspect of it as accidental. One possibility would be to treat the syncretism of nominative and accusative as systematic, but to treat the identity of *-us* in the masculines and in the 'vulgus' type as accidental, by assuming two distinct but homophonous endings *-us<sub>1</sub>* and *-us<sub>2</sub>*, as in (30).

- (30)
- {NOM SG ∪ ACC SG} = X
  - X in neuter = stem + -um
  - NOM SG in masculine = stem + -us<sub>1</sub>
  - X in 'vulgus' type = stem + -us<sub>2</sub>

This analysis treats the paradigms as an example of unidirectional syncretism (between instances of *-um* forms), while the apparent identity of the endings in *servus* and *vulgus* is treated as an accident. In effect, this amounts to a denial that there is such a thing as divergent bidirectional syncretism.

Alternatively, one might treat the identity of endings across different declension classes as systematic but treat the different instances of the same case syncretism as accidental. That would be the consequence of recapitulating the analysis sketched above in (25), where the syncretic set of values includes reference to the lexical class. This is shown in (31), where the class



X describes the distribution of all instances of 'stem + -um', and class Y describes all instances of 'stem + -us'.

- (31) a. {NOM SG neuter  $\cup$  ACC SG} = X  
 b. {NOM SG masculine  $\cup$  ACC SG 'vulgus' type} = Y  
 c. X = stem + -um  
 d. Y = stem + -us

On this analysis, the fact that both X and Y involve syncretism of nominative and accusative is treated as accidental.<sup>4</sup>

Because of what they imply for the modelling of syncretism, examples of divergent bidirectional syncretism are particularly important, so it is worth considering some additional data. So far, the only examples which seem to have been adduced in the literature are those found in Stump (1993, 2001), namely the accusative/dative singular in Old Icelandic, the genitive singular/nominative plural in Russian and the first singular/third plural in Romanian. Some of these examples have been subject to criticism by Feldstein (2003) and Wunderlich (2004), who argue that these patterns are accidental and hence not represented in the morphology. However, the Latin example above cannot be too readily dismissed, and below we adduce some further examples which appear to be good examples of divergent bidirectional syncretism.

Classical Arabic has three cases: nominative, genitive and accusative (see (32)). In the default pattern (singulars and the broken plurals, which are formed by an alternation in the vocalic/syllabic pattern) all three cases have distinct endings: -u, -i and -a. In the so-called sound plurals (formed by suffixation), genitive and accusative are syncretic, marked by the ending -i:, which corresponds to the distinct genitive of the default type.<sup>5</sup> The so-called diptotic declension pattern (displayed by certain adjectival stems, some broken plurals and some personal names; the name reflects the fact that there are two rather than three case forms) likewise has a syncretic genitive/accusative, but the ending is -a, corresponding to the distinct accusative of the default type. The diptotic pattern is found only with indefinites; the definite form and the construct form (head of an adnominal construction) revert to the default pattern.

<sup>4</sup> This is unfortunate, in as much as there is an important generalization that applies to all nouns with nominative/accusative syncretism in the singular, namely that they belong to the neuter gender, taking neuter agreement (see the preceding footnote).

<sup>5</sup> The dual likewise displays genitive/accusative syncretism; e.g. nominative dual, construct state *mu'min-a*, genitive/accusative *mu' min-ay* 'believers.'

(32) Classical Arabic noun declension (Fischer 1997: 196)

	plural	triptotic (default) pattern		diptotic
	'believers.PL' (construct)	'believer' (construct)	'black one' (construct)	'black one' (indefinite)
NOM	mu'min-u:	mu'min-u	'aswad-u	'aswad-u
GEN	mu'min-i:	← mu'min-i	'aswad-i	aswad-a
ACC	mu'min-i:	mu'min-a	'aswad-a	→ aswad-a

The plural endings -u: and -i: are assumed to derive from lengthening of the corresponding singular endings (Kienast 2001: 143). The origin of the diptotic pattern is unclear; Kienast (2001: 142) cites Brockelmann's (1908–13) theory that it started among personal names: some names ended in -u (e.g. *Iazi:du*) and some in -a (e.g. *Šammara*), and these were reinterpreted as fragments of a case paradigm, which was then fleshed out. This proposal assumes that the diptotic endings -u and -a are etymologically distinct from the corresponding case endings -u and -a, but that at some later point the two sets were equated with each other.

As with the Latin example in (26), the analytical problem here is that, if we say that both -i and -a are genitive/accusative, how can the two endings be combined in a single paradigm? On the other hand, using directional rules, one could say that the accusative takes the form of the genitive in sound plurals, and that the genitive takes the form of the accusative in diptotic nouns.

A further example is found in the Pama-Nyungan language Diyari. Dual and plural nouns and pronouns, and female personal names, have an accusative ending -*ŋa* which is distinct from the absolutive (see (33)). In male personal names the ending -*ŋa* is found in both the absolutive and the accusative. A zero ending (the bare stem) is found in the ergative/absolutive of non-singular pronouns, the ergative of non-singular nouns, and the absolutive/accusative of singular nouns.

As with the previous examples, the problem faced by symmetrical rules is posed by the overlapping range of the inflectional forms. The zero ending ranges across all three core cases (ergative, absolutive, accusative), while -*ŋa* is found in both the absolutive and the accusative. Using symmetrical rules, we would associate {ERG, ABS, ACC} with - $\emptyset$  and {ABS, ACC} with -*ŋa*. Since the two rules overlap in the absolutive and accusative, they cannot coexist in the same paradigm. Again, directional rules are the

## (33) Diyari noun declension (Austin 1981: 47–50, 61)

	I	II	III	IV	V
ERG	-(ya)li	-li	-Ø	-ndu	-li
ABS	-Ø	-Ø	-Ø	-ni	-ŋa
ACC	-Ø	-ŋa	-ŋa	-ŋa	-ŋa
LOC	-ŋi	-ŋu	-ŋu	-ŋaŋu	-ŋu
ALL	-ya	-ŋu	-ŋu	-ŋaŋu	-ŋu
DAT	-ya	-ŋi	-ŋi	-ŋaŋka	-ŋi
ABL	-ndu	-ŋundu	-ŋundu	-ŋundu	-ŋundu

I singular nouns

II non-singular nouns, non-singular third person pronouns, singular pronouns

III non-singular first and second person pronouns

IV female personal names, singular pronouns<sup>6</sup>

V male personal names

only device that can give -Ø and -ŋa a unified representation across all of the paradigms. One possible analysis is to identify -Ø as the absolutive ending and -ŋa as the accusative ending. In type I, the accusative takes the form of the absolutive, in type III, the ergative takes the form of the absolutive, and in type V, the absolutive takes the form of the accusative.<sup>7</sup> (In type IV a distinct absolutive ending is found.)

4.3.3 *Symmetrical versus directional rules: a summary.*

Zwicky (2000) has argued that symmetrical rules are sufficient to generate the surface effect of directionality, thus making directional rules unnecessary. However, we have shown that the rejection of directional rules brings real consequences in the range of facts that can be described (further arguments may be found in Evans, Brown and Corbett 2001, using somewhat

<sup>6</sup> Singular pronouns, besides the third person non-feminine, display this pattern in the ergative, absolutive and accusative, while in the remaining cases they behave like non-singular pronouns, with the element -ka- preceding the endings. The third person non-feminine behaves essentially like a non-singular noun, with ergative *ŋulu*, absolutive *ŋawu*, accusative *ŋiŋa*, and remaining cases based on the stem *ŋuŋka* (Austin 1981: 61).

<sup>7</sup> A plausible alternative in this case would be to combine symmetrical and directional rules by viewing -Ø as the default core case ending. Types I–IV, then, follow a familiar split ergative pattern, with a distinct ergative in some paradigms and a distinct accusative in others. In this case, only type V requires a directional rule. In either case, though, directional rules are required.

different evidence). Although symmetrical rules can describe unidirectional syncretism, convergent directional syncretism can be described only by substituting another formal device (rule ordering), or by combining lexical and morphosyntactic information within a single syncretic value, which is undesirable on at least some approaches. Divergent bidirectional syncretism cannot be systematically described with symmetrical rules, requiring that some element of the pattern be treated as accidental.

4.3.4 *Ranked constraints as an alternative to directional syncretism*

Alongside Zwicky's (2000) discussion, the argument that directional effects can be derived without using directional rules has come from the perspective of Optimality Theory (OT). The issue is addressed most directly by Wunderlich (2004), who offers an OT alternative to directional rules. Most relevant is his treatment of what we have termed convergent syncretism, for which he analyses the nominative/accusative ~ genitive/accusative alternation of Russian, described in §3.1.1 and §3.1.2. To recapitulate: for most declension classes, the accusative case does not have a distinct form. In most classes, in inanimate nouns it appears to take the form of the nominative, and in animate nouns it appears to take the form of the genitive. For the present purposes, it will suffice to consider the singular of o-stems (which show the animacy-based alternation) and i-stems (which do not), as shown in (35).

## (34) Nominative/accusative ~ genitive/accusative alternation in Russian

	a. 'table'	b. 'student(m)'	c. 'mother'
NOM	stol	student	mat'
ACC	stol	studenta	mat'
GEN	stola	studenta	materi

The feature values that Wunderlich proposes for the morphosyntactic cases are given in (35). The nominative is simply unmarked. The other cases are rendered in terms of semantic roles: the accusative is [(+hr)<sub>v</sub>] ('there is a higher role (verbal)'), which expresses its subordinate role within a transitive verbal clause, while the genitive is [(+hr)<sub>N</sub>] ('there is a higher role (nominal)'), which expresses its subordinate role within a nominal clause.

(35)

<i>case name</i>	<i>feature value</i>	
nominative	[ ]	
accusative	[(+hr) <sub>v</sub> ]	i.e. 'there is a higher role (verbal)'
genitive	[(+hr) <sub>N</sub> ]	i.e. 'there is a higher role (nominal)'

The relevant case endings are given in (36). The *i*-stem genitive *-i* is fully specified in terms of the underlying morphosyntactic features. The *o*-stem ending *-a* is underspecified: the value [(+hr)], which omits reference to nominal or verbal contexts, represents genitive/accusative together as a natural class. The default ending, *-Ø*, has no feature specifications.

(36)

<i>o-stem</i>		<i>i-stem</i>	
<i>ending</i>	<i>feature value</i>	<i>ending</i>	<i>feature value</i>
<i>-Ø</i>	[ ]	<i>-Ø</i>	[ ]
<i>-a</i>	[(+hr)]	<i>-i</i>	[(+hr) <sub>N</sub> ]

The link between the underlying morphosyntactic features and the endings is effected by three ranked constraints:

- **Compatibility:** the categorical specification of input and output must match. That is, genitive case (with a nominal specification) cannot be used where the input requires accusative case (with a verbal specification), and vice versa.
- **\*(+hr)<sub>v</sub> inanimate:** do not mark accusative case for inanimates.
- **Max (+hr):** if the feature (+hr), common to the accusative and genitive, is present in the input, it must be realized in the output.

The interaction of the above elements is shown in the tableaux in (37)–(39). In animate *o*-stems, the constraint Max (+hr) blocks the ending *-Ø*, because it is not specified for (+hr), thus causing the genitive/accusative to be selected. In the inanimate *o*-stems, however, the genitive/accusative is blocked by the constraint \*(+hr)<sub>v</sub> inanimate, so the unmarked nominative is selected, in spite of its violation of Max (+hr). In the animate *i*-stems, Compatibility

blocks the use of the overtly genitive ending *-i* for the input accusative, so the nominative is selected; the issue of animacy does not even arise.

(37) accusative of animate *o*-stem

input: [(+hr) <sub>v</sub> ], animate	Compatibility	*(+hr) <sub>v</sub> inanimate	Max (+hr)
student-Ø [ ]			*!
* student-a [(+hr)]			

(38) accusative of inanimate *o*-stem

input: [(+hr) <sub>v</sub> ], inanimate	Compatibility	*(+hr) <sub>v</sub> inanimate	Max (+hr)
* stol [ ]			*
stol-a [(+hr)]		*!	

(39) accusative of animate *i*-stem

input: [(+hr) <sub>v</sub> ], animate	Compatibility	*(+hr) <sub>v</sub> inanimate	Max (+hr)
* mat' [ ]			*
mater-i [(+hr) <sub>N</sub> ]	*!		

To the extent that the factual coverage is the same, the choice between this analysis and one which employs directional rules (e.g. Corbett and Fraser 1993) has significance only within the context of the theoretical and descriptive programme of the individual investigator. Wunderlich's (2004) analysis of Russian is part of a larger model of the differential marking of objects and agents, whereby arguments high on the animacy/prominence scale tend to mark the accusative, and arguments low on this scale tend to mark the ergative. Whatever the cross-linguistic insights of this approach, it fails to capture some fairly striking generalizations that obtain within the languages actually under analysis. In the Russian example, the genitive/accusative syncretism displayed by the animate accusative is attributed to underspecification of the ending, so it is, in effect, a lexical idiosyncrasy. But it is not just one ending which needs to be underspecified, but rather at least seven (the four which are treated by Wunderlich, plus three distinct adjectival

and pronominal endings). This is why the animate accusative in Russian and other Slavic languages has long been used as an example of systematic syncretism, and particularly of directional rules (starting with Perlmutter and Orešnik 1973). The alternative as offered by Wunderlich is to treat the sevenfold repetition of this pattern as purely accidental.<sup>8</sup>

However, Wunderlich's analysis differs from a directional approach not only in its theoretical goal, but in its factual coverage as well, at least in the form in which it is presented. In effect, the analysis involves symmetrical rules plus rule ordering, as sketched above in (24); in this case, constraint ranking substitutes for rule ordering. The combination of lexical specifications and constraints state, in effect, that a rule for genitive/accusative precedes a rule for nominative/accusative. Under certain conditions the genitive/accusative rule is blocked, allowing the nominative/accusative rule to be first. Naturally, such a model can easily describe unidirectional syncretism as well. But, as we suggested above, it cannot describe divergent bidirectional syncretism. Wunderlich raises the issue but does not propose an analysis, instead rejecting Stump's (2001) purported example of divergent bidirectional syncretism. However, other examples could be offered in its place (as was done above in Chapter 2: §2.4 and §2.5). Thus, the empirical problem created by divergent bidirectional syncretism remains.

However, the difficulty caused by rejecting directional rules is not really a problem for Wunderlich's model, since it in fact contains them, even though they are not directly exploited. To demonstrate this, let us review some of the key points in the above analysis. The core of the morphological model consists of three elements: the input, the output and the Max constraint

<sup>8</sup> A similar atomization results when we consider another of his proposals, namely that the constraint  $*(+hr)/_V$  inanimate can generally be used to account for the nominative/accusative syncretism typical of Indo-European languages. Recall that this constraint blocks the use of the accusative ending for inanimates ( $\approx$  neuters), which instead use the default form (informally, the nominative). But consider Latin once again. It is true that this analysis is possible for the singular of some nouns of the third declension, examples of which were given in Chapter 3 (§3.1.2): *victor* 'conqueror' versus *aequor* 'sea'. The nominative singular of masculines is the bare stem, and the accusative is the stem plus *-em*. In neuters, the nominative/accusative is the bare stem, which could easily be described as the result of the omission of the accusative ending. But such an analysis cannot be applied to the second declension nouns described above in (26). The neuter is distinguished from the masculine by the lack of the *nominative* singular ending *-us*. Undoubtedly, this could be accounted for by some constraint, but, equally undoubtedly, this is not the same constraint  $*(+hr)/_V$  inanimate found in the third declension, which blocks the accusative. Thus, the observation that neuter nouns in Latin have nominative/accusative syncretism is reduced to the concatenation of two apparently unrelated facts.

which mediates between them. The input is fully specified (accusative, i.e.  $[(+hr)_v]$ ), while the Max constraint is underspecified (genitive/accusative, i.e.  $(+hr)$ ). The behaviour of the output form varies: in o-stems it is treated as underspecified, in i-stems it is treated as fully specified, as shown in (40).

(40) Analysis of the Russian accusative per Wunderlich (2004)

	<i>o-stems</i>	<i>i-stems</i>
input	$[(+hr)_v]$ <i>fully specified</i>	$[(+hr)_v]$ <i>fully specified</i>
output	$[(+hr)]$ <i>underspecified</i>	$[(+hr)_v]$ <i>fully specified</i>
Max	$(+hr)$ <i>underspecified</i>	$(+hr)$ <i>underspecified</i>

However, this variation in the lexical specification of the output forms makes no difference in the selection of the winning candidate. Both the underspecified output and the fully specified output satisfy the underspecified Max constraint. Thus, the tableau in (41) corresponds to those in (37)–(38), and represents symmetrical syncretism: there is a syncretic genitive/accusative form, which can be used for the accusative (as well as the genitive). The tableau in (42) corresponds to (39) and represents directional syncretism: the genitive form can be used for the accusative (as well as the genitive).

(41) Tableau with underspecified output

input: ACC $[(+hr)_v]$	Max $(+hr)$
NOM $[\ ]$	*!
$\varnothing$ GEN/ACC $[(+hr)_N]$	

(42) Tableau with fully specified output

input: ACC $[(+hr)_v]$	Max $(+hr)$
NOM $[\ ]$	*!
$\varnothing$ GEN $[(+hr)_N]$	

Thus, the Max constraint defines a syncretic class of values, while the absence of a distinct accusative in the output produces a paradigmatic gap, which is filled by the best available candidate. The effects of this directional



rule do not surface in this particular instance in Wunderlich's analysis, because they are blocked by a higher-ranking constraint (Compatibility), which bars the use of the genitive for the accusative. But directional rules are nonetheless inherent in the model and, indeed, are implied wherever a fully specified output interacts with an underspecified Max constraint. Thus, Wunderlich's model cannot be seen as offering an alternative to directional rules, because it already contains them.

#### 4.4 Possible constraints on syncretism

In the preceding section we have looked at the properties inherent in different descriptive mechanisms. In this section we look at how these have been employed to describe syncretism, reviewing some representative proposals. More particularly, we look at their restrictiveness, as this is a central concern of most approaches: it is generally assumed that an adequate model will distinguish between possible and impossible patterns of syncretism. Below we evaluate these claims in the light of patterns surveyed in Chapter 3: §3.

##### 4.4.1 Variants on hierarchical structures

A number of proposals have been, in effect, claims that feature values are hierarchically structured, and that syncretism is necessarily a reflection of this structure. The most restrictive version is offered by Williams (1981, 1994), which does not make use of the elsewhere condition. As we have shown in Chapter 2: §2.1, this implies that if there are multiple syncretic patterns in a language, they will be nested within each other, which Williams (1994) expresses with the claim that 'when there are multiple related paradigms, there will be one instantiated paradigm, and all others will have its syncretic structure, and perhaps some more. But no other related paradigm will have a contrary syncretic structure, making distinctions where that one does not' (p. 27). Chvany (1986) and Johnston (1997) argue for loosening this model by, in effect, allowing underspecification, as described above for Noon (2) and Gaagudju (6)–(7). The effect is to allow 'contrary syncretic structures', but only in as much as they can be described given a single linear order of features.<sup>9</sup> McCreight and Chvany (1991) take the logical next step and extend this proposal along multiple dimensions.

<sup>9</sup> Plank (1991) observes that the quest for a single invariant linear order that would capture all the major syncretic patterns of a language is implicit throughout the history of grammatical description.

For example, given a paradigm delimited by two features and drawn as a grid, only those cells which can be brought next to each other can be described as syncretic, as in (43a), while (43b) is an impossible pattern.

(43)

a.	x	y	b.	x	y
X	a	a	X	a	b
Y	a	c	Y	b	d
Z	b	d	Z	c	e

These models remain agnostic about the actual content of feature structure; what they constrain is the co-occurrence of multiple patterns of syncretism involving the same feature values. All of the proposals leave a good amount of material unaccounted for. Thus, what Williams (1994) describes as 'contrary syncretic structure' is in fact common, especially with case, person and gender. The more relaxed model of Chvany (1986) and Johnston (1997) largely holds for case (which they were designed to describe) and person, but not for gender, as seen above in §4.2.1. McCreight and Chvany's (1991) model, which is specifically designed to handle the interaction of multiple features, cannot describe polarity effects (see Chapter 3: §3.7). Finally, these proposals are all predicated on symmetrical rules, so the observations in §4.3 above apply.

A less restrictive model of linear ordering is offered by Plank (1991). In a survey of case syncretism in several Indo-European languages, he notes that although strict linear ordering will not capture all the syncretic patterns for any of the languages, the deviations from linear ordering are fairly minimal, so that cases which are syncretic with each other can at least be represented as adjacent on a two-dimensional model.

##### 4.4.2 Carstairs (1987), Carstairs-McCarthy (1998a, b)

Carstairs (1987) divides inflectional homophony ('syncretism' in the sense we have been using it) into two types:

- **Syncretism.** This occurs where the feature whose value is neutralized and the feature whose value is the determining context are realized simultaneously (the inflectional marker exhibits cumulative exponence). For example, dative/ablative plural in Latin constitutes syncretism for Carstairs because the neutralized feature (case) and the conditioning feature (number) are realised simultaneously by



the endings *-īs*, *-ibus*, which cannot be broken up into distinct case and number morphemes. This is the most common and diachronically stable type of inflectional homophony.

- **Take-overs.** These occur where an inflectional marker that realizes the morphosyntactic value *a* in one context realises both values *a* and *b* in some other context.

He proposes the Systematic Homonymy Claim (Carstairs 1987: 123), which states that all inflectional homophony is either (i) a syncretism or (ii) a take-over, where the conditioning feature is lower on the relevance hierarchy than the feature whose values are neutralized. The relevance hierarchy, proposed by Bybee (1985), ranks inflectional features on their semantic relevance to the meaning of the root, as manifested in cross-linguistic frequency and position. Carstairs cites the following as contexts for take-overs, where the features to the left of the arrows are higher on the relevance hierarchy:

(44)

- tense, mood > person-number
- definiteness > person-number
- number > case

The following schematic noun paradigms illustrate what is possible under this system. Paradigms (45) and (46) both conform to the Systematic Homonymy Claim. Syncretism (in Carstairs' sense) is represented in (45): genitive and dative are syncretic in the plural, expressed by the form *g*, which simultaneously realizes case and number. The paradigm in (46) illustrates a take-over, with homophony of the genitive singular and genitive plural. First, there is separate realization of number (*p*) and case (*a-d*). Second, the neutralized feature (number) is higher on the relevance hierarchy than the conditioning feature (case).

(45)

	SG	PL
NOM	a	e
ACC	b	f
GEN	c	g
DAT	d	g

(Carstairs 1987: table 4.15, 113)

(46)

	SG	PL
NOM	a	p a
ACC	b	p b
GEN	p c	p c
DAT	d	p d

The paradigms in (47) and (48) represent impossible, or at any rate unsystematic, patterns. The paradigm in (47), with syncretism of the genitive and dative in the plural, is not possible, because, although the distribution of the genitive marker *c* makes it look like a take-over, the neutralized feature (case) is not higher on the relevance hierarchy than the conditioning feature (number), in violation of the Systematic Homonymy Claim. Finally, the paradigm in (48) is not possible, because it is not a take-over (*e* does not serve a non-syncretic function elsewhere), nor is it a syncretism, because number (*p*) and case (*a-d*) are realized separately.

(47)

	SG	PL
NOM	a	p a
ACC	b	p b
GEN	c	p c
DAT	d	p c

(Carstairs 1987: table 4.10, 111)

(48)

	SG	PL
NOM	a	p a
ACC	b	p b
GEN	c	p e
DAT	d	p e

(Carstairs 1987, table 4.11, 110)

Before considering the important revisions to this model made by Carstairs-McCarthy (1998a, b), let us consider the predictions made so far. The statistical predominance of what Carstairs-McCarthy terms syncretism is undeniable. What we have termed directional effects – Carstairs' take-overs – are observable only in a minority of cases. Carstairs (1987: 111–12) states that this follows from the reasonable assumption that the normal state of affairs is for an inflectional marker to have a consistent function. Thus, in (45), *g* is always genitive/dative plural, while in (46), *p* is usually plural but then sometimes it is singular/plural. However, the banning of (47) and (48) seems less well motivated. The sort of pattern in (47) is not uncommon; we shall return to it below. On the other hand the pattern in (48) is indeed rare, though we can cite an example involving case in the Dravidian language Pengo (49). (The initial *d* of the singular endings is the post-consonantal variant of *t* and *n*; compare the vocalic stem singular *doŋri*, *doŋri-tin*, *doŋri-to*, *doŋri-ni*, *doŋri-taŋ* 'mountain'.) Though this pattern is rare, that fact may follow from more general principles of morphological organization than from any specific constraint on syncretism. Where features are realized separately, feature conditioned allomorphy is the exception rather than the rule. The rarity of (48) is then a facet of the rarity of the sort of pattern in (50), where case and

- (49) Pengo noun declension, 'hand' (Burrow and Bhattacharya 1970: 32-3)

	singular	plural
NOM	key	key-ku
ACC-DAT	key-diŋ	key-ku-kaŋ
LOC	key-do	key-ku-kaŋ
GEN	key-di	key-ku-ni
INS-ABL	key-daŋ	key-ku-taŋ

- (50)

	singular	plural
NOM	a	p a
ACC	b	p b
GEN	c	p e
DAT	d	p d

number are marked separately, but the genitive, and only the genitive, has a distinct plural allomorph.

Carstairs-McCarthy (1998a, b) offers a somewhat different analysis of these phenomena, which result in a somewhat different range of predictions. The underlying principle is that inflectional meaning should be governed by the same constraints that obtain for lexical semantics, which leads to four axioms, summarized below from Carstairs-McCarthy (1998b):

- A. Lexical items do not contain meanings consisting of incompatible disjuncts, e.g. \*'apple OR banana'. By the same token, the meaning of an inflectional marker should not contain incompatible disjuncts consisting of competing values for the same feature, e.g. \*'ablative OR locative'. (Carstairs-McCarthy assumes that feature structure is flat.)
- B. Lexical items do not have meanings containing negations, e.g. \*'not apple'. By the same token, inflectional markers should not contain negations in their meanings, e.g. \*'not past'.
- C. Lexical items may contain compatible disjuncts. For example, the different senses of *climb* in
  - (a) the boy climbed up the tree

- (b) the boy climbed down the tree
- (c) the snake climbed up the tree

can be reconciled by characterizing its semantics as 'go, upward OR clambering'. Sentence (b) contains only the element 'clambering' and sentence (c) only the element 'upward', but the two meanings are compatible with each other, as witnessed by sentence (a). (Carstairs-McCarthy takes this example from Jackendoff 1985.)

- D. Special vocabularies may exist where the meanings of otherwise distinct lexical items may be collapsed; Carstairs-McCarthy cites the example of the Dyirbal 'mother-in-law language', where, for example, the normal terms *nudin* 'cut deeply' and *gunban* 'cut less deeply' are combined in the single term *dyalnggan* 'cut'. By the same token, where distinct allomorphs of inflectional markers are found in special contexts, for example where case marking is cumulated with plural marking in plural contexts, related meanings which elsewhere have distinct realizations may share the same realization.
- E. No rule can make overt reference to the unmarked value of a feature.

Axiom D now accounts for 'syncretism' as characterized in Carstairs (1987) and is defined as inflectional homophony that occurs under conditions of allomorphy. Cumulative exponence, by definition, provides a context for allomorphy, but is not itself the crucial factor – for example, distinct inflection classes are also relevant contexts.<sup>10</sup> Another property of syncretism under axiom D is that the neutralized meanings be related (p.292); however, since feature structure is construed as flat (p.294), relatedness of meaning cannot be formalized, so it is not clear what constraints emerge from this.

The other axioms account for directional effects, largely replacing take-overs with underspecification. Because of axiom E, which states that the unmarked value is, quite literally, unmarked, underspecification for any value always entails homophony with the unmarked value. This yields two types of directional effect, depending on whether axiom C is invoked. Where axiom C is not involved, it is predicted that the form associated with the unmarked value will prevail in unmarked contexts, as in

<sup>10</sup> If, as Carstairs-McCarthy suggests (1998b: 290), inflection class is to be construed as part of the meaning of an inflectional marker, then this too constitutes cumulative exponence.

example (51), taken from the Chibchan language Ika. First and third person singular are syncretic in all tense paradigms except the distal past. The syncretic 1SG/3SG form has no overt person-marking affix, which makes it look like the 3SG form of the distal past. If we assume that third person and 'elsewhere' are the unmarked values for person and tense, respectively, this is what the axioms should yield, since the form associated with the unmarked third person value is extended in the unmarked context.

(51) Ika (Frank 1990)

	distal past		elsewhere
1SG	(stem)-rua	-na	(stem)
2SG	na-(stem)	-na	na-(stem)
3SG	(stem)	-na	(stem)

This can be represented by the rules in (52), which are in accordance with the axioms above. The ending *-rua* is specified as the first person distal past ending, *na-* as the second person prefix, unspecified for tense, and  $\emptyset$  is the general default, unspecified for tense and person.

(52)

-rua	1 distal past
na-	2
$\emptyset$	

Carstairs-McCarthy (1998b) illustrates the effects of axiom C with an example from Hungarian conjugation (53), which had been described in Carstairs (1987) as a take-over of the 1SG indefinite by the definite in the past.

(53)

	present		past
1SG INDF	vár-o-k		vár-t-a-m
1SG DEF	vár-o-m	→	vár-t-a-m

At issue is the distribution of the 1SG affixes *-k* and *-m*, which are isolated in (54). In the present, *-k* marks the indefinite and *-m* the definite, but in the past *-m* marks both.

(54)

	present	past
1SG INDF	-k	-m
1SG DEF	-m	-m

Carstairs-McCarthy attributes the distribution of the affixes to the rules:

(55)

-m	1 definite OR past
-k	1

Since the values 'past' and 'definite' can co-occur, this is a compatible disjunction; *-k* is simply an elsewhere form. Although these rules result in neutralisation both of definiteness and of tense, at the level of the word, it is only the past tense forms which are identical. This is a secondary effect, resulting from the fact that there is a separate layer of affixes which distinguish the two tenses (the distinct theme vowels, plus the past tense marker *-t-*), thus breaking up the potential homophony between present and past.

To summarize, Carstairs-McCarthy's (1998a, b) model accommodates two types of non-accidental syncretism: (i) syncretism in the strict sense, involving a combination of values represented by a distinct allomorph, and (ii) underspecification. (The continued need for take-overs is acknowledged (1998b: 299) but not directly incorporated into the model.) Does this model allow for testable predictions?

In the case of 'syncretism' (in the sense defined above), the prediction would appear to be that where we find an affix (or inflectional operation of some sort) which always combines some set of values wherever it is found, these values should be related to each other, that is they should have related meanings. However, without an explicit theory as to what constitutes

'related' meanings, we cannot readily assess this prediction. However, in the case of underspecification, the model implies two clear predictions about the behaviour of directional effects:

- (56) I. Directional effects will always involve the unmarked value of the feature in question (because of axiom E).  
 II. Directionality will be of two sorts; either:
- a. The form associated with the unmarked value of some feature will prevail in the context of the unmarked value of some other feature.
- or-
- b. The form associated with the marked value of some feature will prevail in the context of the marked value of some other feature.

Assessing the validity of these predictions is complicated by the fact that they all revolve around the notion of markedness, which is itself hard to pin down with precision. Therefore, our observations can only be tentative. Nevertheless, working with commonly held assumptions about what should be construed as the unmarked value, we find no general support for these constraints. We summarize our observations below. Note that we are merely looking at whether the data conform, superficially, to the predictions. Whether the individual examples even admit of a comprehensive analysis in terms of Carstairs-McCarthy's (1998a, b) model is a question we have not addressed.

**Case.** Prediction I is met in all instances of what we have called 'core case syncretism' (Chapter 3: §3.1.2), which is indeed the most common type. The prediction is violated wherever directional effects can be observed which do not affect nominative or absolute, and a number of these have been seen so far, or will be adduced below, e.g. genitive/accusative in Russian and Classical Arabic (see (32) above); ergative/locative in Koryak ((13b) in Chapter 3: §3.1.2) and the ergative/genitive in Lak ((14) in §3.1.2); the genitive/accusative ~ dative-locative/accusative alternation in Bonan ((15) in Chapter 3: §3.1.2); and dative/illative in Erzja Mordvin ((18) in Chapter 3: §3.1.2). Within those examples which conform to prediction I, prediction IIa seems to be met in cases of differential object or agent marking, where accusative or ergative marking is absent for some set of nominals. Examples which relate to prediction IIb are hard to interpret. For example, the accusative form seems to prevail in Greek and Latvian ((3) in Chapter 3: §3.1.2); whether these conform to prediction IIb depends on whether one interprets neuter (in the case of Latin) and feminine (in the case of Latvian) as marked values.

**Person.** Directional effects involving person are outlined in Chapter 3: §3.2.3; the results are summarized in (57), where 'u' indicates unmarked and 'm' indicates marked. The symbol to the left of the slash ('/') stands for the syncretic value, the symbol to the right of the slash represents the context. Thus u/u means 'the form associated with the unmarked person value is extended to a marked value in the unmarked context', m/m means 'the form associated with a marked person value is extended to the unmarked value in a marked context', and so on.

(57) Directional effects involving person (from Chapter 3: §3.2.3)

	1/2	2/3	1/3
a. Burarra		M/M	
b. Callahuaya		M/?	
c. Carib		M/U	
d. Dani		M/M	
e. Dutch		U/M	
f. Gujarati	??	U/?	
g. Koiari			U/?
h. Kongo		M/U	
i. Literary Kannada	??		
j. Murle			M/M
k. Nobiin	?/M	U/M	
l. Old Icelandic		M/U	
m. Shinassha	?/M		
n. Suená		M/M	
o. Udihe	??		

If third person is construed as the default value, then prediction I is violated where directional effects do not involve third person (in Gujarati, Literary Kannada, Nobiin, Udihe and Shinassha). In evaluating prediction II, we have assumed that values such as singular, present tense, indicative and declarative constitute the unmarked values of the contextual features, though in a number of cases it is not obvious what markedness values to assume. Possible examples conforming to prediction IIa are found in Gujarati and Koiari: in both cases the third person form prevails, but it is not clear whether the context should be construed as unmarked. Examples conforming to prediction IIb come from Burrara, Dani, Shinassha and



Suena, while Callahuaya and Udihe are possible examples as well. Neither component of prediction II is met by Dutch or by Nobiin (since the unmarked third person form prevails in the marked context), nor by the Carib, Old Icelandic and Kongo examples (because the marked second person form prevails in the unmarked context).

**Number.** Assuming a flat feature structure, we have found no good examples conforming to either prediction. Were one to admit a hierarchical features structure, with dual as the marked counterpart to plural, then the Koryak example cited in Chapter 3: §3.5 seems on the surface to conform to both predictions: the dual form prevails in certain transitive combinations, which may be construed as the marked context. However, one should recall that in Koryak, morphologically, it is the plural which is marked with respect to the dual (by the addition of the suffix *-la-*).

**Tense-aspect-mood.** The convincing examples of directionality conform to prediction I but not to II. Thus Gapapaiwa, Tawala and Loni (cited in Chapter 3: §3.6.2) all involve syncretism with what may reasonably be construed as an unmarked tense, in the context of marked person (non-third person), but the form which prevails is the zero marking associated with the *unmarked* tense.

The intuition behind Carstairs-McCarthy's predictions is that directional effects can be attributed to underspecification, and that the possibilities for underspecification are themselves limited by markedness relationships. However, as we have seen, directionality does not seem to be generally predictable on the basis of the values of the features involved. Carstairs-McCarthy does allow the possibility that apparent counter-examples may be analysable as rules of referral (1998a: 18–19). In this case, the model makes no generally applicable predictions about directional effects, since there is no theory-independent way of identifying which phenomena should be construed as rules of referral.

#### 4.4.3 *Impoverishment*

Impoverishment (Noyer 1997, 1998, 2001) is a device allowing for the constrained alteration of feature values and plays a key role in some descriptions of syncretism. Bobaljik (2002) writes that '[i]mpoverishment... admit[s] of predictions about impossible syncretisms cross-linguistically, predictions that appear to be largely borne out.' Specifically, impoverishment is designed to account for directional effects. As an illustration, Bobaljik adduces an example from Stump (1993), syncretism of the 2SG and 3SG in the two past tenses of Macedonian:

(58) Macedonian (Stump 1993)

	present	aorist	imperfect
1SG	padn -am	padna -v	padne -v
2SG	padne -š	padna	padne -še
3SG	padne	padna	padne -še
1PL	padne -me	padna -v -me	padne -v -me
2PL	padne -te	padna -v -te	padne -v -te
3PL	padn -at	padna- -a	padne- -a

In Stump (1993) this example was used to illustrate a stipulated directional rule, namely a rule of referral. The syncretic form is interpreted as looking like the third singular, both for its zero person-number ending and for the absence of the past tense marker *-v*.<sup>11</sup> The rule of referral stipulates that 2SG takes the form of 3SG (i.e. 2SG and 3SG form a set, whose form is determined by the 3SG). Bobaljik offers instead an interpretation in terms of impoverishment, which illustrates its two key aspects: (i) deletion of features, and (ii) the assumption of unmarked or default feature values. In this case, impoverishment deletes the feature second person in the singular of the past tenses. This deleted value is replaced by the default value, construed as third person. What is not possible is the replacement of the third person form by the second, which would be perfectly feasible under Stump's model. Thus, impoverishment makes two predictions:

- I. Directional effects will involve the unmarked value of a feature.
- II. The form associated with the unmarked value will prevail.

Note that prediction I coincides with that of Carstairs-McCarthy (1998a, b), while II is the opposite. However, an assessment of the validity of these predictions is contingent on the particular model of feature structure employed, and this is an issue distinct from the device of impoverishment as such.

As discussed above, different models of feature structure make different predictions, and so, the effects of impoverishment will differ according to

<sup>11</sup> The absence of *-v-* in the 3PL forms has a different diachronic explanation from that of the 2SG/3SG form. Historically, the *-v-* descends from *-x-*. There is no evidence that *-x-* was ever present in the singular forms at any stage in the history of the Slavonic languages. Its loss in the 3PL is relatively recent (post-sixteenth century; Koneski 1996 [1986]: 92), due to the regular loss of intervocalic *-x-* in Macedonian.



the feature structure assumed. If we assume flat feature structure, then the observations above about Carstairs-McCarthy's prediction I apply, and the observations about prediction II apply in the reverse: Carstairs-McCarthy's positive examples are counter-examples to impoverishment's predictions, and vice versa. More elaborate models of feature structure create more markedness relationships, and so more domains for impoverishment to operate in. But, as Carstairs-McCarthy points out (1998b: 288), this also opens up the range of surface effects that can be produced. He illustrates this with Noyer's account of number syncretism in the verbal prefixes of the Papuan language Nimboran. The prefix *k-*, which is characteristic of the dual alone for first and third persons, is found for the plural as well in second person and first inclusive (59).

(59)

	person	
	1, 3	2, 1INCL
SG [+SG -PL]	Ø	Ø
DU [-SG -PL]	k-	k-
PL [-SG +PL]	i-	k-

Noyer's analysis is illustrated in (60). Number values are treated as compounds – significant for the present example is that dual and plural are each treated as further modifications of the value non-singular. Impoverishment works by deleting the plural value, yielding the underlying non-singular. Separately, the prefix *i-* is construed as overtly plural, while *k-* is the more general non-singular, yielding what looks like the 'take-over' of the plural by the dual in the second person and first inclusive.

(60)

<i>impoverishment</i>	<i>inflectional rules</i>	
[+PL] → Ø/ [+2 -SG]	i	[+PL]
	k	[-SG]

But, as Carstairs-McCarthy points out, the reverse situation can just as easily be described by transforming the dual into non-singular, and treating *i-* as the generic non-singular marker, as in (61)–(62):

(61)

	person	
	1, 3	2, 1INCL
SG [+SG -PL]	Ø	Ø
DU [-SG -PL]	k-	i-
PL [-SG +PL]	i-	i-

(62)

<i>impoverishment</i>	<i>inflectional rules</i>	
[-PL] → Ø/ [+2 -SG]	i	[-SG]
	k	[-SG -PL]

If, as Noyer assumes, dual is marked with respect to plural, then it would seem that impoverishment makes no consistent predictions in this instance about directional effects.

#### 4.4.4 *Stump (2001) and Zwicky (2000)*

Stump (2001) presents a model in which overt stipulation of syncretic sets of values plays a major role; Zwicky (2000) is a reaction to and adaptation of this model. Stump assumes flat feature structure, with no markedness asymmetries. He divides syncretism into three types, each with its own formal representation:

- i. Unstipulated syncretism. This is described by simple underspecification for the feature in question. Because of the assumptions about feature structure, this is effectively limited to instances where *all* the values of a feature are syncretic.
- ii. Unidirectional and bidirectional syncretism. These are described by rules of referral. The Bidirectional Referral Principle (p. 219) stipulates that any rule of referral also entails its inverse. That is, if

a rule of referral states that value  $x$  of feature  $a$  takes the form of value  $y$ , this implies that value  $y$  takes the form of value  $x$ , all else being equal.

- iii. Symmetrical syncretism. As with rules of referral, this involves a stipulated set of values, but here the form is defined across the whole set rather than in terms of the individual members. In a sense, symmetrical syncretism can be defined negatively: it is syncretism which does not lend itself to being described by underspecification (because some but not all values of a feature are involved) nor by rules of referral (because no directional effects are in evidence).

These devices can describe any syncretic pattern. However, Zwicky 2000 argues that it is too complex, imputing underlying distinctions to phenomena which are, in his view, epiphenomenal. First, he rejects the distinction between unstipulated and stipulated syncretism: what Stump terms unstipulated syncretism is a convenient representational short cut, but no less stipulative than simply declaring the identity of all the values. Second, he rejects the distinction between directional and symmetrical syncretism: directional effects can be seen as a by-product of underspecification (see §4.4.3 above). Thus, Zwicky proposes retaining Stump's symmetrical syncretism as the sole type. However, as pointed out above in §4.3 and its subsections, a symmetrical approach can only readily describe unidirectional syncretism: what we have described as convergent bidirectional syncretism cannot be described without assuming further devices, and divergent bidirectional syncretism cannot be described at all. Thus, there are inherent limits to what Zwicky's model can describe.

On the other hand, though Stump's basic system can describe any pattern, he imposes a distinct constraint onto this, namely the Feature Ranking Principle, which reads:

For any language  $\ell$ , there is a ranking  $>$  of morphosyntactic features in  $\ell$  which satisfies the following condition: for every stipulated syncretism  $S$  in  $\ell$ , if the dominant properties of  $S$  include a specification of the feature  $F_d$  and the subordinate properties of  $S$  include a specification of the feature  $F_s$ , then  $F_d > F_s$ . (Stump 2001: 239)

In effect, this states that, within a given language, if you have stipulated syncretism of values of feature  $x$  in the context of feature  $y$ , then you cannot have stipulated syncretism of values of  $y$  in the context of feature  $x$ . Empirically, this represents a limit on the number of different syncretic

patterns that can be accommodated in a language, and it appears, on the whole, to be borne out. However, we know of one possible counter-example, namely case and number syncretism in Slovene, which seem to require stipulated syncretism of number in the context of case, and of case in the context of number. Slovene distinguishes three numbers and six cases. Number syncretism in the context of case is systematically found in nouns and adjectives, where dual and plural are syncretic for the genitive and locative. As we argue below in Chapter 5: §5.1.1, this pattern is best modelled as a rule of referral, as evidenced by the suppletive pattern of the word *človek*. Case syncretism in the context of number is widespread; in particular, the dual always has two syncretic forms, though the actual patterns may vary both across and within word classes. All nominals have dative and instrumental syncretism in the dual. Nouns and adjectives additionally show nominative/accusative syncretism.

(63) Declension of Slovene 'person'

	singular	dual	plural
NOM	človek	človeka	ljudje
ACC	človeka	človeka	ljudi
GEN	človeka	ljudi	ljudi
LOC	človeku	ljudeh	ljudeh
DAT	človeku	človekoma	ljudem
INS	človekom	človekoma	ljudmi

Pronouns have accusative/genitive syncretism, while the behaviour of the locative dual varies. It never has a distinct form of its own in Slovene; the literary standard allows syncretism either with the dative/locative, or with the genitive (Toporišič 1976: 241–2).<sup>12</sup>

<sup>12</sup> Genitive/locative syncretism in the dual is an archaism artificially introduced into the literary language in the nineteenth century (Tesière 1925: 305). Nonetheless, it is given as the preferred option in such authoritative grammars as Toporišič (1976). It is interesting to note that the third person pronoun, whose declension has both pronominal and adjectival characteristics, has three options for its locative dual: it can be identical to the dative/instrumental dual (*njima*), to the genitive dual (*naju*) or to the locative plural (*njih*) (Toporišič 1976: 241–2).

(64) Declension of Slovene 'I'

	singular	dual	plural
NOM	jaz	midva	mi
ACC	mene	naju	nas
GEN	mene	naju	nas
LOC	meni	naju ~ nama	nas
DAT	meni	nama	nam
INS	menoj	nama	nam

If we assume, along with Stump, that feature structure is flat, then one of the patterns of case syncretism in the dual must be stipulated, since underspecification for case in the context of number can only be invoked once.

#### 4.5 Summary

##### 4.5.1 Predictions and counter-examples

The contrast is often made between a restrictive theory, which is able to make predictions about possible and impossible structures, and a descriptive framework, which is open-ended. The formal models we have reviewed above aim to provide a restrictive theory of syncretism. In no case, however, do the predictions correspond precisely to the empirical evidence – there is always a residue of counter-examples. On a literal-minded approach this would seem to invalidate all such attempts straightaway. However, we can assume that most investigators who have proposed constraints are aware of the possibility of counter-examples, so a more nuanced assessment of such proposals must focus on how these are treated.

One way of dealing with exceptions would be to treat them as the result of accidental homophony, and thus beyond the reach of morphological analysis. A clear example of accidental homophony was cited above in Chapter 1 (§1.5), where vowel reduction in Russian leads to the homophony of the case-number endings *-o* and *-a* when unstressed. However, more often than not the examples we see are ambiguous, so that it is no more natural to interpret them as phonologically accidental than as morphologically systematic.<sup>13</sup> More importantly, there is diachronic evidence that the boundary

between accidental and systematic is fluid: syncretic patterns which arose as by-products of regular sound change may be reinterpreted as morphologically systematic, and then extended to environments that were not subject to the original sound change. Sologub (1983) discusses such an example from Russian. In Standard Russian, the genitive singular of *a*-stem nouns is distinct from the dative/locative: genitive singular *ženy* 'wife' versus dative/locative singular *žene*. In some dialects, the two forms have collapsed, resulting in genitive/dative/locative singular *ženy* or *žene* (depending on the dialect). This does not follow from any sound change but is rather the result of analogy with the *i*-stems (as in NOM/ACC *kost'*, GEN/DAT/LOC *kosti* 'bone'; see (90) in Chapter 3: §3.8.2), where this collapse *was* phonologically regular (p. 86). Other examples that have been regarded as the morphological extension of originally accidental patterns include some forms cited in Chapter 3, namely the Dhaasanac B forms (examples (83) and (84) in §3.7.2), the second singular / third singular present in Old Icelandic (§3.2.4), the first singular / third singular present in Livonian (§3.2.4), as well as the genitive singular/

as the concatenation of separate instances of accidental homophony. Nunggubuyu shows systematic syncretism of first exclusive and second person non-singular in person marking on verbs, alongside a non-syncretic first inclusive form. This occurs in one of the two sets of subject prefixes (the choice is determined by tense, aspect and polarity (negation)), and in the object prefixes. According to Noyer, these two person values do not constitute a natural class (indeed, it is hard to imagine how they would; see the discussion at the end of §3.2.2). Instead, he treats subject-and object-person syncretism as two separate instances of accidental homophony. Syncretism of the subject markers is construed as the accidental by-product of a morphological rule. The rule itself is not given, but the derivations (Noyer 2001: 811) are given below, where *nV*:- is construed as the first person non-singular subject marker, *nV*- is the second person non-singular marker, and *wu*- as the non-singular intransitive subject marker. (Note that in Noyer's analysis, *nV*:- is in fact construed as unmarked for number; its function as a non-singular marker is due to the existence of a series of overtly singular second person markers.)

	underlying form		surface form
1DU F	<i>nV</i> :- <i>ŋi</i> -	→	<i>ni</i> :- <i>ŋi</i> -
2DU F	<i>nV</i> - <i>wu</i> - <i>ŋi</i> -	→	<i>ni</i> :- <i>ŋi</i> -
1DU M	<i>nV</i> :- <i>ni</i> -	→	<i>ni</i> :- <i>ŋi</i> -
2DU M	<i>nV</i> - <i>wu</i> - <i>ni</i> -	→	<i>ni</i> :- <i>ŋi</i> -
1PL	<i>nV</i> :- <i>ru</i> -	→	<i>nu</i> - <i>ru</i> -
2PL	<i>nV</i> - <i>wu</i> - <i>ru</i> -	→	<i>nu</i> - <i>ru</i> -

The syncretic 1PL/2PL object markers have the form *na*-. This is assumed to result from the existence of two homophonous prefixes: second person non-singular *nV*- (as seen above) and first person non-singular object *nV*- (Noyer 2001: 760).

<sup>13</sup> As an illustration of the danger of such an approach, we can take Noyer's (2001) treatment of syncretism (primarily of gender and number) in the non-Pama-Nyungan Australian language Nunggubuyu, where the formal model forces systematic syncretism to be treated

accusative plural in Common Slavonic (Meillet and Vaillant 1934: 398) and the collapse of singular and plural in neuter nouns in Old High German (Wurzel 1987: 69). If such diachronic interpretations are held to be valid, then we must admit the possibility that accidental homophony may be reinterpreted as morphological systematicity. This is not to claim that all apparent instances of syncretism must necessarily be treated as morphologically systematic, but rather that such an interpretation should be available for any apparent instance, to be examined on its individual merits rather than excluded a priori. A formal model which instead dismisses certain phenomena from the outset can only be a poor representation of linguistic reality.

A more inclusive approach would characterize the counter-examples not as accidental, but rather as ‘marked’. That is, the morphological model can produce them, but only in a complex or indirect fashion. This approach is subject to the same observations made above: it is a covert distinction, and so has no necessary empirical ramifications. While neither approach can successfully determine the possibility of a given pattern in a given language, they do imply statistical and diachronic claims. Systematic patterns are common, accidental or marked patterns are rare and diachronically unstable. Both these points invite caution. The causal connection between formal markedness and rarity is often assumed but remains undemonstrated (especially since formal markedness is not subject to direct observation). Further, as the examples in Chapter 3 show, the standard assumptions about what are common and what are rare patterns are in need of revision.

The related issue of diachrony is also problematic. For example, Carstairs (1987: 128–31) gives the example of the syncretism of 1SG/2SG/3SG in the imperfect indicative in medieval dialects of Italian, which was resolved in Modern Italian by the creation of new, unsyncretic forms. This is taken as evidence that the original syncretic pattern was unsystematic. He observes, though, that unsystematic patterns may be diachronically persistent. Further, we may note that systematic syncretism may be resolved over time as well – consider the Old Nubian paradigm cited in (48) in Chapter 3: §3.2.4, where 2SG/3SG and 1PL/2PL are syncretic. This constitutes systematic syncretism in Carstairs’ (1987) terms, as it involves cumulative exponence, and its diachronic stability is attested by its retention over ten centuries (Browne 2002: 1) in contemporary Nubian languages such as Dongola Nubian (Armbruster 1960). But in the Nubian language Nobiin this syncretism was resolved through the creation of new,

distinct second person forms. What this seems to indicate is simply that homophony of any sort may be resolved over time; underlying systematicity plays no necessary role.

#### 4.5.2 *Towards a model of syncretism*

In this chapter we have shown that no attempt to impose formal constraints on the description of syncretism is wholly successful. On the other hand, there *are* some decided tendencies, remarked on throughout Chapter 3, most especially the prevalence of certain patterns of case, person and number syncretism, which have a plausible basis in the structure of the features in question. The challenge for morphological theory is to allow the formal model to be open-ended, while still giving an account of the fact that some patterns are common, and others rare. Below we suggest that the statistical distribution of patterns is a reflection of diachronic processes.

Consider first the change undergone by Anejom, discussed in (45) in Chapter 3: §3.2.4, where a four-way person distinction (first inclusive and exclusive, second and third) and three-way number distinction (dual, trial and plural) was collapsed into a single form, etymologically the third plural. Though striking in its rapidity, the direction of change does not seem unexpected: third person substitutes for the other forms, and plural substitutes for dual and trial. The basis for the innovative system of twentieth-century Anejom need not be sought in language-specific morphological quirks. Rather, it follows from quite widespread assumptions about the unmarkedness of the third person with respect to other person values, and of plural with respect to other non-singular number values.

Contrast this with the developments in the Cushitic language Dhaasanac, shown in (83) and (84) in Chapter 3: §3.7.2, where syncretism of the first plural exclusive form with the 2/3SG F form is extended from one class of stems (where it was the result of regular sound change) to all stems. This combination of values cannot plausibly be argued to have any basis in the structure of person or number. Rather, this accidental disjunction of values was taken over as a pattern by the morphology.

The change in Anejom yielded a ‘natural’ result, while the change in Dhaasanac yielded an unnatural result. But in essence the two kinds of change are the same. The original paradigmatic space was reorganized according to a new morphological pattern. The difference lies in the source of the morphological pattern. In the case of Anejom, we can suppose its source lay in (universal?) properties of feature structure, whereby 3PL is unmarked with respect to other non-singular person-number values. Thus,

this morphological pattern is shared across most (all?) languages. In the case of Dhaasanac, the morphological pattern was created by a phonological change that affected one stem class. By definition, this morphological pattern is language-specific.<sup>14</sup> The difference between natural (i.e. common) and unnatural (i.e. uncommon) syncretic patterns thus need not be reflected in the formal model. We suggest that contrast between these two diachronic routes is sufficient to account for the statistical predominance of morphosyntactically natural patterns. Paradigmatic morphological patterns based on common or universal elements of feature structure (i) are available to all languages, (ii) can arise spontaneously (as in Anejom) and (iii) are self-regenerating in case of disruptions. Morphological patterns based on phonological change are language-specific, and always in competition with morphological patterns based on feature structure. It only follows that the former type should be more widespread.

On this view, even if we manage to construct a comprehensive model of feature structure that will account for some syncretic patterns, the possibility still remains that patterns may be codified which are independent of feature structure. The crucial question here is whether there are any constraints on the production of *unnatural* syncretic patterns. At present we do not have enough information to decide this question; as the discussion above will have shown, it can only be resolved empirically.

<sup>14</sup> This distinction roughly corresponds to that between 'system-independent' and 'system-dependent' morphological naturalness, as discussed within *Natural Morphology* (Mayerthaler 1987, Wurzel 1987).