

Marking Markedness: The Underlying Order of Diagonal Syncretisms

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This paper deals with a pattern of apparent homophony in inflectional paradigms that cannot be satisfactorily explained by traditional means. By ‘apparent homophony’ we mean any instance in which different combinations of features—different ‘slots’ in a paradigm—are realized by the same phonological form. In the cases that concern us here, the slots that are thus collapsed have no features in common, and their phonological realizations cannot be analyzed as default morphemes. Drawing on data from Old Church Slavonic and Standard Arabic, we argue that these problematic cases can be elegantly accounted for by a new form of underspecification, in which a morpheme may be specified for a degree of featural markedness without being specified for any individual feature.

1. Background

When confronted with an instance of apparent homophony, current morphological theory has three standard responses in its repertoire. The most satisfying of these is to posit a monosemous morpheme that is underspecified for one or more features. For example, this approach neatly accounts for the English personal pronoun paradigm shown in (1).

(1) English personal pronouns

		Singular	Plural
1st		<i>I</i>	<i>we</i>
2nd		<i>you</i>	
3rd	m.	<i>he</i>	<i>they</i>
	f.	<i>she</i>	
	n.	<i>it</i>	

There are two syncretisms in the paradigm above, each of which can be attributed to underspecification. While first- and third-person forms all exhibit a number contrast, the second-person has a single form *you* for both singular and plural. We can say that this form is simply specified as second person, with no specification for number. Similarly, the third-person plural form *they* has no gender specification, even though there is a gender contrast in the singular. In each case, the slots that are collapsed have at least one feature in common—the *you* slots are both second person, and the *they* slots are all third person plural.

A second possibility (or simply an extension of the first) is to posit a fully unspecified ‘elsewhere’ morpheme. Such a form appears in positions for which no

appropriately specified morpheme is available. This is the approach used by Sauerland (1995) for the Dutch data in (2).

(2) Dutch strong adjectival suffixes

	[-neuter]	[+neuter]
[-pl]		∅
[+pl]	-e	

In this example, the slots represented by -e do not all share a common feature. However, -e can be analyzed as a fully unspecified default morpheme, inserted wherever the features of the zero morpheme [+neuter, -plural] are inappropriate.

The last resort in cases of apparent homophony is to say that the homophony is genuine. Sometimes homophonous morphemes simply cannot, and should not, be assigned a shared underlying morphological representation. For example, the English words *be* and *bee* share a phonological form, but have nothing in common semantically or syntactically. Positing accidental homophony does not explain anything, but sometimes it is the right answer.

2. The problem

All three of these approaches fall short when confronted with a paradigm such as the Old Church Slavonic (OCS) neuter declension in (3). (All OCS data in this paper are drawn from Lunt (1959), Trubetzkoy (1968), and Leskien (1969). Phonologically predictable alternations in the data are not shown here.)

(3) OCS neuter noun and adjective suffixes

	Sg.	Pl.	Dual
N./A.	-o	-a	-æ
Gen.	-a	-ə	-u
Loc.	-æ	-æxə	
Dat.	-u	-omə	-oma
Inst.	-emə	-i	

In this paradigm, there are three of what we shall term ‘diagonal’ syncretisms—cases of apparent homophony between slots that share neither number nor case. These are summarized in (4).

- (4)
- a. -a genitive singular
 - a nominative/accusative plural
 - b. -æ locative singular
 - æ nominative/accusative dual

- c. -u dative singular
- u genitive/locative dual

These syncretisms cannot be the result of either of the two types of underspecification mentioned above. In each pair in (4), the two forms have no features in common; only a fully unspecified morpheme could realize both. However, there cannot be three default forms in a single paradigm—if -a, -æ, and -u are all featureless, there is no way of predicting which one will go where.

Must these then be treated as cases of homophony? No. There is an underlying formal pattern that permits a more elegant and informative solution. What the paired forms in (4) have in common is not their specific features, but rather their total structural markedness. For example, in (4a), the form -a represents either more marked case (genitive) and less marked number (singular) or less marked case (nominative/accusative) and more marked number (plural).

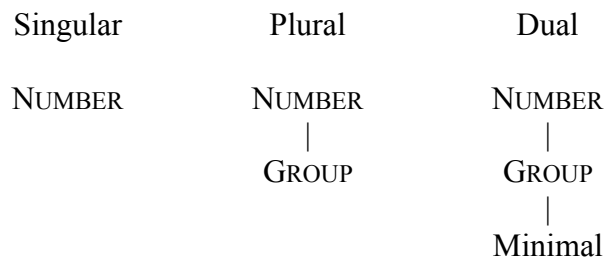
3. Assumptions about markedness

In order to formalize the notion that morphemes can be specified for markedness, we must first define the notion of markedness; this section of the paper sets out our notion of what markedness is and what it means. We assume that markedness is formally characterized as follows:

- A more fully specified form is more marked than a less specified form.
- In a feature-geometric representation, degree of specification is represented by the presence or absence of structure.
- Features are monovalent—there are no marked negative values for features.
- Combinations of features are realized by the most highly specified vocabulary item whose features are compatible (as in Halle and Marantz (1993), among others).

For example, grammatical number can be represented as in (5); the feature specifications shown here are based on Harley (1994), Ritter and Harley (1998), and Béjar (1998). In this set of representations, dual is the most marked number and singular the least marked.

(5) Feature geometry for number



Formal markedness is correlated with the following empirical phenomena:

- Implicational hierarchies (*sensu* Greenberg 1966): If a feature F is more marked than another feature G, then the presence of F in a language implies the presence of G. For example, no language distinguishes dual number from plural unless it also distinguishes plural from singular.
- Susceptibility to neutralization: Neutralization of a feature in a geometry entails neutralization of its dependent features. In the geometry in (5), removing the feature GROUP from a representation entails removing Minimal as well. Thus the geometry predicts that any subsystem of a grammar in which the singular–plural contrast is neutralized will also lack the plural–dual contrast.
- Triggering of neutralization: When a set of forms is relatively unmarked on one featural dimension, it generally allows a broader range of contrasts along other dimensions. The presence of more marked values for one feature triggers neutralization of other features. For example, OCS has a six-way case contrast in the singular and plural, but only a three-way contrast in the dual. This suggests that a grammar can limit the overall degree of markedness allowed in a set of feature specifications, and thus that grammar in general is sensitive to overall markedness.

4. Old Church Slavonic

As shown in (3) and (4), OCS inflectional morphology exhibits diagonal syncretisms involving case and number. In order to formalize the notion that the collapsed slots in the paradigm share total degrees of markedness, we need representations that will allow us to calculate markedness of number and markedness of case in directly comparable ways.

For number, we adopt the feature geometry in (5). Case is more complicated. OCS has six cases that can be assigned by verbs and prepositions; these are shown in (6). (For our current purposes, we can set aside the vocative, which appears only on non-neuter nouns and only in the singular; vocative may actually be more like a second person feature than like a case feature.)

(6) OCS cases

Nominative	Accusative	Genitive	Locative	Dative	Instrumental
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When the cases are listed in the order shown in (6), each pair of adjacent cases represents a contrast that is collapsed in some syncretic form. For example, in the dual, OCS collapses nominative with accusative, genitive with locative, and dative with instrumental:

(7) OCS dual noun and adjective suffixes:

	masc.	neut.	fem.
Nom.	-a	-æ	
Acc.			
Gen.	-u		
Loc.			
Dat.	-oma		-ama
Inst.			

Syncretisms between locative and dative can be seen in the pronoun system:

(8) OCS singular personal pronouns

	1	2	refl.	3 masc.	3 neut.	3 fem.
Nom.	azə	tī		i	e	ja
Acc.	mē	tē	sē	i or ego		jō
Gen.	mene	tebe	sebe	ego		eē
Loc.	mənæ	tebæ	sebæ	emə		ej
Dat.				emu		
Inst.	mənojō	tobojō	sobojō	imə		ejō

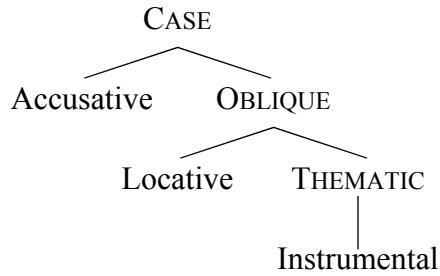
Based on these syncretic patterns, we propose the following geometric representations for case features:

(9) Case specifications for OCS

Nom.	Acc.	Gen.	Loc.	Dat.	Inst.
CASE	CASE	CASE	CASE	CASE	CASE
	Accusative	OBLIQUE	OBLIQUE	OBLIQUE	OBLIQUE
			Locative	THEMATIC	THEMATIC
					Instrumental

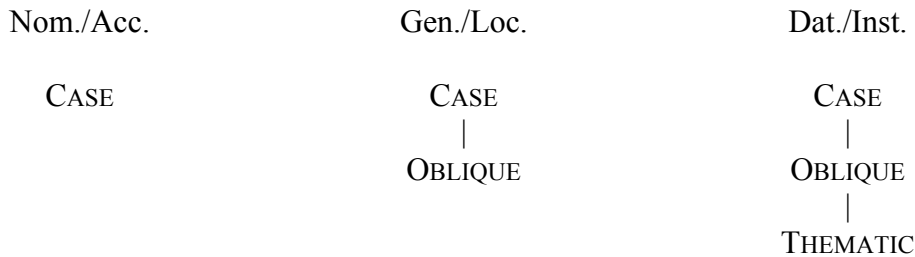
So far as markedness can be independently determined, the markedness relations implicit in the representations in (9) appear to be correct. The more marked cases are less frequent cross-linguistically (see for example Calabrese (1998: 85–86)), and within OCS they are more likely to contain neutralizations of gender contrasts. The individual specifications in (9) are summarized in the case geometry in (10).

(10) Case feature geometry



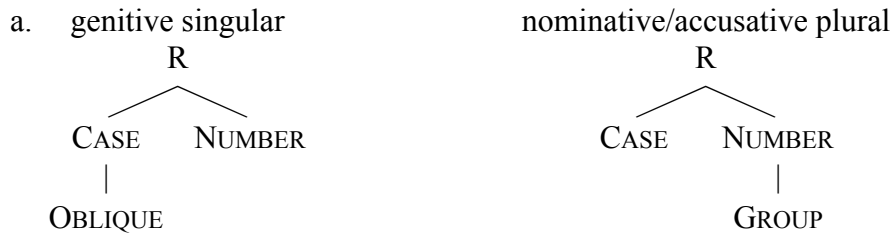
Features represented as sisters in (10) are mutually exclusive alternatives; for example, the OBLIQUE node may have either Locative or THEMATIC (or neither) as a dependent in the representation of any individual case, but it cannot have both. The reduced set of case contrasts apparent in the dual can be achieved simply by underspecifying those case features that have no dependents in the geometry in (10), leaving only the organizing nodes (which are shown in SMALL CAPITALS). The resulting set of specifications is shown in (11). Given a markedness-based vocabulary insertion mechanism, each position in the paradigm will be realized by the most fully specified compatible morpheme.

(11) Case specifications in the OCS dual

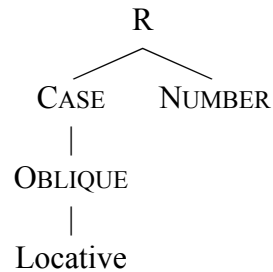


Two of the diagonal syncretisms in the neuter paradigm in (3) can now be understood in terms of markedness. The feature-geometric representations for the collapsed pairs of case-number combinations in (4a) and (4b) are shown in (12a) and (12b).

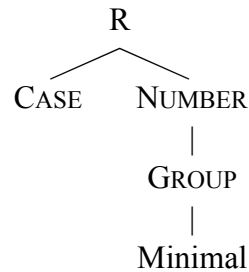
(12) Representations for collapsed case-number combinations



b. locative singular



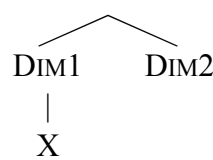
nominative/accusative dual



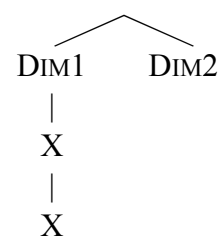
In (12), the two case-number combinations in each pair have exactly the same degree of structural markedness; the only difference is in the dimension in which the marked features occur. We can thus say that the case-number combinations in (12) are realized by morphemes with the specifications in (13).

(13) Specifications for -a and -æ

a. -a



b. -æ

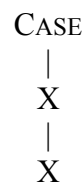


The suffixes in (13) are specified only for the degree of markedness of the positions in which they are to be inserted; they are underspecified as to the individual features involved. Thus the suffix in (13a) will match both sets of specifications in (12a), and (13b) matches (12b).

The one remaining diagonal syncretism in (4) collapses dative singular with genitive/locative dual. These two case-number combinations do not have the same degree of markedness; however, this syncretism can now be attributed to an elsewhere form, since we have now shown that the other two diagonally syncretic forms need not be considered defaults.

While this markedness analysis was originally inspired by diagonal syncretisms involving two or more types of features, it can also capture syncretisms within a single dimension of a paradigm. For example, a locative-dative syncretic form such as the ones in (8) can be represented as in (14).

(14) Case specification for a locative-dative syncretic form



A morpheme with this specification can be inserted in any position in which the CASE dimension contains the Oblique node dominating one other feature; since this feature may be either Locative or THEMATIC, the morpheme will match both locatives and datives. Allowing morphemes that mark markedness thus accounts for syncretisms both across and within the featural dimensions of the OCS inflectional system.

5. Standard Arabic

In Standard Arabic (SA) there is syncretism not only within paradigms, but across them. The homophonous perfect agreement markers and pronominal suffixes in (15) and (16) can be seen as underspecified with respect to the syntactic category of the base.

(15) SA perfect/past subject agreement paradigm (V+__)

	3masc	3fem	2masc	2fem	1
Singular	-a	-at	-ta	-ti	-tu
Plural	-uu	-na	-tum	-na	-naa
Dual	-aa	-at-aa	-tum-aa	-tum-aa	—

(16) SA pronominal system (D+__)

	3masc	3fem	2masc	2fem	1
Singular	huw-a	hiy-a	?an-ta	-ti	-tu
Plural	hum-u	hun-na	?an-tum-u	-na	-naa
Dual	hum-aa	hum-aa	?an -tum-aa	-tum-aa	—

Similarly, there is underspecification across the imperfect agreement paradigm and the definite case paradigm.

(17) SA imperfect/present subject agreement (__+V+__)

	3masc	3fem	2masc	2fem	1
Singular	y__u	t__u	t__u	t__iina	?__u
Plural	y__uuna	y__na	t__uuna	t__na	n__u
Dual	y__aani	t__aani	t__aani	t__aani	—

(18) SA Definite case paradigm (N+__)

	Nominative		Accusative		Genitive	
	Masc	Fem	Masc	Fem	Masc	Fem
Singular	-u	-at-u	-a	-at-a	-i	-at-i
Plural	-uuna	-aatu	-iina	-aati	-iina	-aati
Dual	-aani	-at-aani	-ayni	-at-ayni	-ayni	-at-ayni

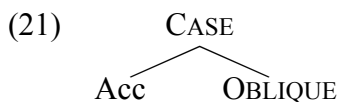
Within these paradigms there are five homophonous pairs which defy a traditional underspecification analysis, but which nonetheless suggest an underlying syncretism and not accidental homophony. Three of the pairs are shown in (19). They are syncretic with respect to accusative and genitive case features.

- (19) i. -iina accusative masculine plural
 -iina genitive masculine plural
 ii. -aati accusative feminine plural
 -aati genitive feminine plural
 ii. -ayni accusative dual
 -ayni genitive dual

A traditional underspecification analysis for these forms would require neutralization of the genitive/accusative contrast. Assuming that the relative markedness of the SA case system can be represented as a subset of the geometry developed above, this could only be captured by delinking the features [Acc] and [OBLIQUE] from the case node, effectively positing a representation identical to the nominative form — that is, the form realizing the least marked case.

- (20) Accusative: Genitive: Nominative:
 CASE CASE CASE
 ‡ ‡
 Acc OBLIQUE

This result is unsatisfactory because it predicts a syncretism between all three cases, which is unattested in SA. The representation for the forms in (19) must capture the fact that they realize a more marked case, without specifying either genitive or accusative to the exclusion of the other. The solution lies in a markedness analysis. At an abstract level, the genitive and plural pair have equivalent markedness structures. As shown in (21), both accusative and genitive share the representational property of being marked as dependents of the CASE node. The representation in (22) captures both cases, to the exclusion of all others.



(22) Accusative/Genitive

Case
|
X

Now consider the homophonous pairs in (23) and (24).

(23) -u singular (case paradigm)
-u first person plural (imperfect paradigm)

(24) -iina accusative/genitive masculine plural (case paradigm)
-iina second person feminine singular (imperfect paradigm)

There are no shared features in either of the pairs in (23) and (24). Either mismatch could, in principle, be repaired by positing a fully unspecified underlying representation []. However, it is not the case that *both* can receive such an analysis. We follow Noyer (1991), Harley (1994) and Ritter (1997) in assuming that *-u* is the default morpheme. This choice is the most desirable on theory-internal grounds (it is less specific than *-iina*, and therefore more likely to be unspecified; also the breadth of distribution is far wider for *-u* than for *-iina*).

The total featural mismatch between the two instantiations of *-iina* is resolvable if we view this as a diagonal syncretism. A position with more marked person (second), more marked gender (feminine), and less marked number (singular) is analogous to a position with more marked case (accusative/genitive), less marked gender (masculine), and more marked number (plural).

(25)	3 rd person	2 nd person	1 st person
	PERSON	PERSON	PERSON
		PARTICIPANT	PARTICIPANT
			speaker

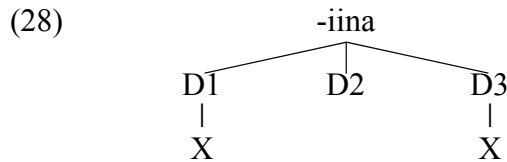
That third person is the unmarked person has been well established in the literature (Benveniste 1971, Ritter 1997). We assume that in SA first person is more marked than second person because of paradigmatic neutralization facts. Gender is neutralized on first person forms, but not on second person forms. Similarly, there is no first person dual category, but there is a second person dual.

The assumed representations for gender are given in (26), and I assume the representations for number presented in (6).

(26)	Masculine:	Feminine:
	GENDER	GENDER
		feminine

Given the above feature-geometric representations for the dimensions of person, number, gender and case, the seemingly incompatible specifications for *-iina* given in (24) are in fact structurally identical (note: linear order in (27) is irrelevant).

(27) second person feminine singular:genitive/accusative masculine plural:



6. Predictions

If diagonal syncretisms result from monosemous vocabulary items with abstract specifications, then we predict that these forms should be as diachronically stable as any other inflectional morphemes. This is in fact the case. For example, Akkadian (Old Babylonian) had the same accusative/genitive syncretism as SA, and even more strikingly it had the cross-paradigm diagonal syncretism in (29).

(29) Akkadian (Miller and Shipp 1996)

-ii	second person feminine singular	(imperfect paradigm)
-ii	accusative/genitive masculine plural	(case paradigm)

Similarly, modern Czech preserves the genitive singular/nominative plural syncretism found in the OCS neuter paradigm (the locative singular/nominative dual syncretism disappeared with the loss of the dual):

(30) Czech

-a	neuter genitive singular
-a	neuter nominative plural

7. Conclusions

Specifying vocabulary items for structure alone allows us to avoid positing rampant homophony, and reveals an underlying pattern in syncretisms between forms that share no individual features. The analysis can be extended to other problematic cases within individual dimensions of a paradigm, as in the SA

genitive-accusative syncretisms. Furthermore, we provide a new kind of support for the proposal that formal markedness has a role in grammar, and that feature geometries have a significance beyond the encoding of hierarchies and implicational relations.

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*The authors would like to thank Alana Johns, Elizabeth Cowper, and Abdel-Khalig Ali for their insights and suggestions.