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PARADIGMATICITY WITHOUT PARADIGMS[1]

Abstract: Arguments from patterns of syncretism taken to show that the paradigm is "a real object, and not the epiphenomenal product of various rules" (Williams 1994:22) are re-examined from the perspective of vocabulary-based theories of morphology. Recurring patterns of syncretism within a language may be captured equally well in theories without paradigms, as in those without; in neither type of the theory do the patterns come for free, and the devices employed in either type of theory are of equivalent complexity. While the patterns themselves thus do not constitute an argument either way, a particular requirement on relations among paradigms within a single language, proposed as a universal in Williams 1994, is statable only in theories encompassing paradigms. If upheld, this Instantiated Basic Paradigm requirement would constitute a powerful argument in favour of paradigms. Data from Russian declension shows that the proposal is untenable. Grammar may be paradigmatic in various ways, but grammars do not require explicit reference to the structure of paradigms, and are limited to making reference to the pieces that make up a paradigm (features, vocabulary items) and rules for combining these.

Keywords: Paradigms, Lexicalism, Distributed Morphology, Impoverishment (versus) Rules of Referral

0.   INTRODUCTION

Plank (1991) begins with the observation that "[t]he earliest extant grammatical texts are paradigms" (p.161). The long linguistic and philological traditions have established a wealth of knowledge about the properties of paradigms, notably regarding the issue of syncretism, but one fundamental question has not been definitively answered, namely (1):

(1)   Does knowledge of language (grammar) include knowledge (memorization) of paradigms themselves or just of the pieces that constitute paradigms and rules for generating them?

Consider, by way of a simple, illustrative example, the (partial) paradigm of a regular English verb given in (2):

(2)

	Present		Past	
	Singular	Plural	Singular	Plural
1 psn	**play-ø**	**play-ø**	**play-[d]**	**play-[d]**
2 psn	**play-ø**	**play-ø**	**play-[d]**	**play-[d]**
3 psn	**play-[z]**	**play-ø**	**play-[d]**	**play-[d]**

As is well known, the information contained in this paradigmatic representation can be generated from the set of morpho-syntactic features indicated (in this case, two tenses, three persons, two numbers), along with a disjunctively ordered list of morpheme realization rules, or equivalently, competing VOCABULARY ITEMS in the terminology of Distributed Morphology (Halle & Marantz 1993). That is, abstracting away from the usual phonological considerations—necessary on either approach—(3) will derive (2).

(3)   a. Active Features   b. Vocabulary Items

Tense (2)	-d	⇔	past
Number (2)	-z	⇔	3 sg
Person (3)	-ø	=	default / **elsewhere**

The question in (1) thus asks whether an English speaker's knowledge of their language—their grammar—is more accurately represented by (2) or (3) (or more specifically, (3b), since the set of morphosyntactic features is present on both approaches). This question constitutes a major divide between classes of theories of morphology. On the one hand are *paradigm-based* theories, which assume that representations such as (2) are part of the grammar; on the other are *vocabulary-item-based* theories, which maintain that (3) is the best representation of the grammar, and that paradigms are epiphenomenal, derived constructs. Vocabulary-item-based theories are more restrictive that the paradigm-based counterparts, hence, the burden of proof lies squarely with proponents of paradigm-based theories to show that the additional power of a paradigm is exploited by UG. And there is, of course, no shortage of purported arguments to this effect.

In this paper, I seek to counter one set of arguments in favour of paradigm-based theories over vocabulary-item-based alternatives. Specifically, I will examine the arguments given in Williams (1994) regarding patterns of syncretism. I will argue first that Williams provides a valid and important critique of naïve vocabulary-item-based theories, but that this critique does not lead inescapably to the conclusion he draws. In particular, the argument from syncretism ultimately does not distinguish between the two classes of theories. The patterns of syncretism that Williams identifies may motivate an enrichment to naïve vocabulary-item-based theories (specifically, the kind of feature-manipulation device instantiated by Impoverishment rules in Distributed Morphology, cf. Bonet 1991, 1995), but the patterns require an equivalent enrichment to naïve paradigm-based theories. The patterns of syncretism are not a priori predicted by either class of theory, and can be accommodated with comparable formal devices in either class of theory. In passing, I will briefly compare Impoverishment to a similar device,

namely Rules of Referral as proposed by Zwicky (1985) and developed by Stump (1993), noting that of the two, only impoverishment allows for a restrictive theory of syncretism, one which in fact captures nicely the data used by Stump to argue for rules of referral.

After having shown where the two classes of theories do not differ, I will argue that one part of Williams's theory of syncretism does constitute a real point of difference between the two theories. Specifically, Williams proposes a universal requirement of an *Instantiated Basic Paradigm* (explained below). I will show that such a requirement crucially refers to implicational relations among paradigms, and thus must be stated over paradigms and can not be stated in a theory such as DM which treats paradigms as epiphenomenal constructs, arising from the combination of vocabulary items and impoverishment rules in a given language. If the Instantiated Basic Paradigm requirement is a part of Universal Grammar, then paradigms are a part of grammars, and the more restrictive vocabulary-item-based theories are inadequate. As it turns out, the Instantiated Basic Paradigm requirement is empirically untenable, a fact noted by Baerman (2000). The conclusion we must draw is that on this one point where the two classes of theories are in principle distinguishable, exactly the additional expressive power which allows a paradigm-based theory to state the Instantiated Basic Paradigm requirement is in fact not made use of by UG. Thus, considerations of restrictiveness point towards the (enriched) vocabulary-item-based theories, such as Distributed Morphology.

It should of course be noted from the outset that I neither claim (nor aim) in this paper to address all arguments that have been put forward in favour of the extra expressive power of paradigms within UG. I am simply targeting one set of what appear to be particularly good arguments for paradigms, and showing that they do not go through. I leave for future work the extension of this investigation to other arguments for paradigms, such as those put forward in

work by A. Carstairs-McCarthy (for recent criticisms of which, see, e.g., Noyer 1997 and Halle & Marantz 2001).

1. UNDERSPECIFICATION AS A THEORY OF SYNCRETISM

A review of the role of underspecification in explaining certain kinds of syncretism will serve as a useful point of departure for this paper. A paradigm, as presented in (2), is nothing more than a structured list of forms, a convenient descriptive device. Much of the interest in going beyond lists of forms and developing theories of paradigm structure comes from the cross-linguistic prevalence of syncretism, that is, recurrence of a single form in multiple cells of the paradigm. In English (2), the *-d* form is syncretic, occurring throughout the past tense, and the *-Ø* forms occur everywhere in the present tense *except* the 3sg. The presentation in (3) constitutes a theory of this syncretism. The set of morphosyntactic features (person, with three values, and number and tense with two values each), effectively defines the range of possible exponents (the paradigm space), and then the list of vocabulary items, consulted disjunctively from top to bottom, yields the form for any given combination of features. In this presentation, there are not five homophonous zero affixes, specified for the different contexts of insertion, rather the zero affix is treated as unspecified, having the distribution it does by virtue of the fact that there is a more highly specified vocabulary item, namely *-z*, specified to occur only in the context of third person singular. In turn, the 3sg *-z* need not be positively specified to occur only in the present tense, it does not occur in the past tense because the past tense *-d* occurs more highly in the list and will therefore take precedence in realizing the inflectional affix in the context of the features [3 sg past]. Leaving aside familiar questions of order in the list, the structure of the theory in (3) derives the information in (2), but the theory does not contain a paradigms per se. In such a theory, no grammatical principle or rule may appeal to properties of paradigm structure (as

opposed to properties of features or of vocabulary items), since the paradigm structure is epiphenomenal.

Note that one property of a theory of this sort is that underspecification entails competition among vocabulary items. Given the context [3 singular past], all three vocabulary items are in principle compatible with this context, but it is the most highly ranked item in the list that is obligatorily inserted (thus: *She played, *She plays, *She play*). Any theory that invokes underspecification (and thus competition of this sort) is necessarily REALIZATIONAL. Underspecification or competition for vocabulary insertion (or rule application) is always determined relative to some context, and the context must therefore be determined first. In the case of inflectional morphology, this means that the morpho-syntactic representation (called the morphemic representation in Matthews 1972) which the vocabulary items are competing to express must be determined prior to the actual choice among exponents. Realizational theories contrast with strongly lexicalist theories such as Lieber (1980, 1982) and DiSciullo & Williams (1987) in which the (syntactic) properties of a word are uniquely determined by the properties (i.e., features) of that word's constituent morphemes, *where 'morphemes' are identified by their phonological instantiations*. On strongly lexicalist theories, the verb *sing-s* is third person singular *because* the features [3,sing] are contributed by the "-s" suffix (DiSciullo & Williams 1987:27). The distinction between realizational and strongly lexicalist theories is related to the general issue of paradigm structure (a strongly lexicalist theory as the term is understood here is incompatible with underspecification, and thus with the approach to paradigms in (3)). Nevertheless, the issue will not be taken up here, in part since the theory under investigation (Williams 1994) explicitly adopts underspecification and thus realization. In what follows, then, the entire discussion will be cast in a realizational perspective. In particular, I will cast the

discussion of the paradigm-free theory in terms of the framework of Distributed Morphology (DM, Halle & Marantz 1993). This framework is not only realizational in the broad sense but also distinct from other realizational theories such as Matthews (1972), Anderson (1992) and Williams (1994) in that DM claims that the morpho-syntactic representation relative to which the rules of exponence (VOCABULARY INSERTION) apply is in fact none other than the syntactic representation—the result of the concatenative rules of syntax having applied to abstract morphemes (bundles of syntactic features). This choice —while I believe ultimately strongly justified—is for present concerns an issue of expository convenience; it has no bearing on the main point, but is useful to keep in mind in considering the specific proposals below.

2. META-PARADIGMS, OR RECURRENT PATTERNS OF SYNCRETISM

Though Williams (1981, 1994) accepts underspecification in morphology, he criticizes the kind of vocabulary-item driven approach to syncretism which (3) instantiates. His major criticism is that, in any given language, it is often true that "the pattern of syncretism is a quite abstract structure, standing above particular words, particular rules, particular suppletive relationships" (Williams 1994:26). We may illustrate Williams's point with respect to the English verbal system discussed above. The notation in (3b) initially suggests that the reason the regular past tense suffix wins out over the third person agreement (i.e., in 3 SG PAST contexts) is precisely because the individual vocabulary item *-d* is ranked higher in the list of competitors than is *-z*. But it is not an idiosyncratic property of this exponent of past tense that it blocks 3sg agreement. Rather, it is a general property of English (ignoring *be*) that regardless of the specific past tense

or past participial affix (of which there are four:[2] -*n*, *"ed"* ={-əd, -t, -d}, -*t*, and Ø) associated with a given verb, that affix will always preclude agreement and in particular the perfectly regular third person agreement. For example, the past tense of *dwell* is (for many speakers) the phonologically unexpected *dwel-t* /dwel-t/ (cf., *yelled* /yel-d/). Even though this form takes an affix distinct from the vocabulary item -*d*, the past tense in a third person singular context is the same as the past tense in all other contexts (*I dwelt, She dwelt, *Last year she dwells*). As Williams puts it: "even suppletive verbs, the limiting case or irregularity, respects the pattern of syncretism; the verb *go* has *went* as its past tense form. Things could have been different: *went* could have been the third past plural form, with *goed* (or something else) for all the other forms; but then, go-went would have violated the language-wide pattern of syncretism" (p.25). On a vocabulary-item driven approach, this means that all past tense formatives must be listed above the third person singular in the list of vocabulary items in (3b).

A second example making the same point comes from Russian. The subset of formatives that occur in the nominative case for third person pronouns, along with regular nouns, short adjectives, and past tense verbs, is given in Halle (1997:428) as in (4).

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[2] All four affixes occur with and without triggering vowel (or other stem) changes, hence the two are logically distinct, see Halle & Marantz (1993), Noyer (1997).

	-Ø	-t	-ed	-en
+ Stem Change	bind, see bound-Ø, saw-Ø	buy, send bough-t, sen-t	tell, flee tol-d, fle-d	break, drive broke-n, drive-n
- Stem Change	beat, put beat-Ø, put-Ø	dwell, spell dwell-t, %spell-t	mind, ski mind-ed, ski-ed	beat, see beat-en, see-n

(4)　a.　ACTIVE FEATURES:　b.　VOCABULARY ITEMS:

3 genders	-/i/ ⇔	plural
2 numbers	-/a/ ⇔	feminine
	-/o/ ⇔	neuter
	-/Ø/ ⇔	elsewhere[3]

The ordering of the plural vocabulary item above the others in particular yields the familiar pattern in which gender distinctions are absent in the plural, as in the third person nominative pronouns,, given in (5).

(5)
Masc (Sg.)	*on*	Masc (Pl.)	*on-i*
Fem (Sg.)	*on-a*	Fem (Pl.)	*on-i*
Neut (Sg.)	*on-o*	Neut (Pl.)	*on-i*

On the treatment in (4), the reason that there are no gender distinctions in the plural in pronouns is because of a property of the suffix *-i*, namely, its listing above the exponents of gender in (4b). Note in particular that this ordering is not (in any obvious way) forced by the elsewhere or subset principle. It is, however, a general property of Russian that gender is never distinguished morphologically in the plural. Compare the nominative pronouns to the dative pronouns in (6) and the nominative adjectival endings in (7).

(6)
Masc (Sg.)	*emu*	Masc (Pl.)	*im*
Fem (Sg.)	*ej*	Fem (Pl.)	*im*
Neut (Sg.)	*emu*	Neut (Pl.)	*im*

(7)
Masc (Sg.)	*-yj*	Masc (Pl.)	*-ye*
Fem (Sg.)	*-aja*	Fem (Pl.)	*-ye*
Neut (Sg.)	*-oe*	Neut (Pl.)	*-ye*

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[3] More accurately, *yer*, the so-called fleeting vowel.

Williams's critique of vocabulary-based theories amounts to saying that it is in fact a property of English grammar that it contains, in addition to the various exponents that will fill the cells, the general paradigmatic structure in (8), what we might term a 'meta-paradigm'.

(8)   The English Meta-Paradigm

	Present		Past	
	Singular	Plural	Singular	Plural
1 psn				
2 psn		B	C	
3 psn	A			

Likewise, the grammar of Russian, on Williams's view would contain the information that standing above the individual exponents of gender and number features is the meta-paradigm in (9).

(9)   The Russian Meta-Paradigm:

	Singular	Plural
Masc	A	
Fem	B	D
Neut	C	

Vocabulary-based theories such as (3) and (4) appear to treat these general properties of English and Russian as the accidental coincidence of a series of ordering statements. (Note, of course, that both the Russian and the English cases described here have simple solutions and do not really bear on the issue at hand. However, they make extremely convenient surrogates for more complex cases that really illustrate Williams's point, hence I will continue to use them in this capacity.)

The question to ask at this point is: does the existence (descriptively speaking) of such meta-paradigmatic properties constitutes an argument for the existence of abstract paradigm structure over and above the inventory of features and the list of exponents thereof in a given language? In

other words, does accepting (without argument) that the theory should account for the effects here called meta-pardigms require us also to accept paradigms?

2.1 Meta-paradigms in a paradigm-free theory

The answer is no. As we will see presently, the effects of meta-paradigms do not follow from the basic properties of either class of theory; if such effects are real, both paradigm-based and vocabulary-based theories must be supplemented to capture them. Moreover, the mechanisms required to capture the effects in either type of theory are reasonably straightforward and of comparable formal complexity. Hence, the existence of generalizations statable in terms of meta-paradigms in and of themselves do not distinguish among the two classes of theories.

To begin with, let us examine Williams's proposal for incorporating (meta-)paradigm structure into the grammar. Williams's (1981, 1994) theory of paradigms will be discussed in more detail below, but for the moment consider the following key properties of the theory.[4] The first property is that Williams imposes a hierarchical geometry on the morphosyntactic features in a given language. For the English verbal system, this hierarchy is given as in (10) (Williams 1994:24-25). The superscripts will be explained presently, the remainder of the tree is to be read such that, for example, the [+/- finite] distinction is a dependent of the feature [verb], infinitive verbs divide into two classes, "perf" corresponding to perfect (past) participles and "inf" corresponding to true infinitives, etc.[5] Thus, the node marked "3^B" corresponds to the feature

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[4] Let us immediately lay aside concerns about the Latin data on which Williams's theory is based, raised in Baldi (1983) and Joseph & Wallace (1984). Our interest is the structure of Williams's theory and therefore we may grant for the purposes of discussion that the theory is adequate for some range of data.

[5] In presenting this tree, Williams states that it is a hierarchization of a 4 dimensional-strucutre (person × number × present-past × finite). The details of the correspondence to the two-dimensional representation, not made precise in Williams (1981, 1994), do not appear to be important here.

constellation [3rd person singular past finite verb]. In this way, "the terminal nodes [of the tree structure] are the actual cells of the paradigm" (p.24).

(10)   English
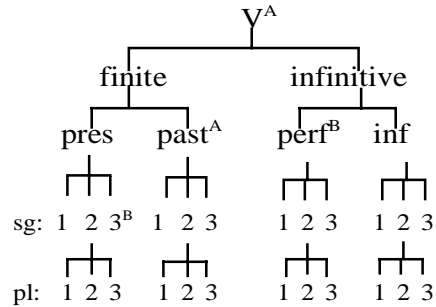
The effects of meta-paradigms are captured in this view by singling out specific nodes as 'entry points'—"the points at which concrete forms are specified" (p.24). These are indicated with superscripts. For example, regular verbs in English have four specified forms, corresponding to the nodes marked with either A or B, for example, as in (11).

(11) V^A = *write*   past^A = *wrote* [**-Ø**] 3^B = *writes*   perf^B = *written*
         V^A = *hit*   past^A = *hit* [**-Ø**] 3^B = *hits*   perf^B = *hit*
         V^A = *prove*   past^A = *proved* [**-d**] 3^B = *proves*   perf^B = *proven*

Underspecification is incorporated into this theory in that "a cell is filled by the nearest specified node above it". In the case at hand, the fact noted above that the past tense form never displays the 3sg agreement suffix */-z/* is now formally expressed by the fact that no node dominated by past^A has an A or B superscript. The nearest specified node above [3 sg present] is that node itself (3^B), but the nearest node above [3 sg past] is past^A, the general past tense. Hence, regardless of the exponent of the past tense , the meta-paradigm or 'pattern of syncretism' imposed by the tree supplemented by pre-specified entry points is invariant for the language (on the distinction between A and B, and on the verb *be*, see below).

Williams's approach to meta-paradigms thus has two key components: (i) the hierarchical organization of morpho-syntactic features, and (ii) stipulated, language-particular properties about possible vocabulary items (entry points). Each of these properties has proper analogues on paradigm-free approaches.

Note in particular that feature hierarchies already provide a simple, paradigm-free solution to the English and Russian cases discussed above. The real generalizations at stake are that a vocabulary-based theory must list all past tense formatives above agreement formatives in English, and all plural formatives above gender formatives in Russian. Just as the individual meta-paradigm structures must be stated on a language-by-language basis on a paradigm-based approach, it is by no means impossible to impose rankings on classes of features, for example, by means of a feature hierarchy ranking number above gender when the subset principle is not at issue (see Lumsden 1987 for such an approach) either on a language-specific basis or, more interestingly, universally (see Noyer 1997 for discussion). If we may appeal to hierarchies, as Williams does, the objection to Halle's treatment disappears by simply incorporating plural > gender into the determination of disjunctive ordering statements.

For purely expository reasons, though, let us lay aside the solution in terms of hierarchies and continue to focus on the simple cases of meta-paradigms provided by English and Russian, accepting them as surrogates for more complex cases that do not admit of a simple, feature-hierarchy treatment. In particular, let us turn to the second component of Williams's theory, specifically, the entry points. As noted above, Williams's theory is crucially realizational in the broad sense; since the lexical entries in (11) are specified relative to the marked arrangement of morpho-syntactic features in (10), the arrangement of features must be established prior to the operation of (what are effectively) lexical insertion rules in (11). The effect of the entry points is

to exclude certain combinations of features from being potential targets for lexical insertion, and in particular, when this is coupled with the "nearest specified node above it" convention, this directly mirrors underspecification. No verb in English can have person or number distinctions in the perfect because no node dominated by perf^B is marked as a possible target for lexical insertion. That is, the nodes/cells [3 sg perf], [1 sg perf], [3 pl perf] etc. all behave for the purposes of possible lexical insertion rules as if the person and number features were not considered, i.e., as if they were just [perf].

Compare this to the effect of *Impoverishment Rules* introduced into the framework of DM in Bonet (1991, 1995) (see also Noyer 1998 and Frampton 2000 for discussion). DM is also a realizational framework, in which vocabulary items compete for insertion as exponents of a morpho-syntactic feature structure. Underspecification governs their insertion, as in (3b). Bonet proposes that *prior to the operation of vocabulary insertion rules such as (3b)*, the morphology may manipulate the morpho-syntactic representation in limited ways. One such manipulation is the deletion of features in specific contexts, a process she calls *Impoverishment*. Two examples of possible impoverishment rules are given in (12).

(12)   a.   [person, #] → Ø / [+perf]   (or +past)
         b.   [gender] → Ø / [plural]

The effect of such rules is straightforward. By deleting person and number features in the context of [+perf] in English, no subsequent vocabulary insertion rule will be able to refer to these features, and thus, no verb in English can have person or number distinctions in the perfect. There can be any number of distinct exponents of [+perf] (or [+past]), but no exponent of [3 sg +perf] distinct from [+perf] could exist. Moreover, even though a particular verb form may be [3 sg +perf] in the syntax, the 3 sg features are deleted by (12a) prior to vocabulary insertion, and thus the context for insertion of the *-z* affix is not met at the point of vocabulary insertion. By

parity of reasoning, the rule in (12b) will have exactly the effect in Russian that regardless of the particular exponents involved, no gender distinctions will ever be marked in the plural. As Frampton (2000:1) describes the argument, impoverishment rules reduce the burden on the learner; rather than learning 6 nominative forms for each aspects of Russian nounal (i.e., nominal, pronominal and adjectival) declension, the learner need only discover 4 forms for each paradigm, plus a language-wide rule deleting gender in the plural.

Impoverishment rules manipulate the morpho-syntactic structure prior to vocabulary insertion, in particular, by enforcing underspecification effects that stand above particular words, particular rules, and particular suppletive relationships. In particular, they have the same effect as Williams's entry points, stating language-wide generalizations over hierarchical arrangements of features.

It is important to stress that this observation does not constitute an argument that Williams's theory and that of DM (including impoverishment rules) are mere notational variants when considered *in toto*.[6] In section 3 below, I will focus on specific points on which the theories do

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[6] One important difference alluded to above is that features may be active in the syntax, despite being unexpressed (because of underspecification) in the overt morphological forms (cf., *The sheep is...* vs. *The sheep are...*, with obligatory agreement controlled by the unexpressed number of sheep referred to). It follows that such features cannot be project from the overt morphological form, a point discussed in Anderson (1992, see e.g., p.87). Bonet discusses such cases extensively; for Williams, this means that lexical insertion can not be conceived of as rewrite rules; the syntactic features that are not expressed must be carried along with the underspecified lexical entries into the syntax.

Another difference is that impoverishment rules have effects—and thus independent motivation—beyond paradigmatic syncretisms. For example, Bonet (1995) discusses the famous "spurious *se*" of Spanish, and a range of similar cases in Catalan. In the Spanish case, the combination of the third person dative (normally *le(s)*) and third person accusative (*lo*) clitics surfaces as *se lo*. In isolation, *se* has a range of uses (suggesting its default nature), but outside of this particular context, expressing third person dative is not among them. An impoverishment rule deleting all agreement features of a third person dative when preceding another third person clitic predicts that the agreement-less clitic will surface as the default, namely *se*. Unless the entire clitic cluster is treated as a paradigm, such examples constitute independent evidence for the necessity of impoverishment.

differ, arguing for the vocabulary insertion theory. Before doing so, however, it is worth noting a few additional properties of the Impoverishment mechanism.

2.2   Impoverishment versus Referral

Impoverishment rules address one other criticism of vocabulary-based theories raised indirectly by Williams's comment on suppletion of *go~went*, and made more explicitly in Stump (1993) in his discussion of *Rules of Referral*. Rules of referral (originally proposed by Zwicky 1985) are related to impoverishment rules in that they manipulate the morphosyntactic feature structure prior to vocabulary insertion.[7] However, whereas Impoverishment uniquely deletes features, referral rules may convert any arbitrary feature matrix into any other, in any context. Since impoverishment admits of only a (quite small) proper subset of the manipulations admitted by referral (which admits anything), impoverishment is clearly to be preferred on quite general grounds, unless it can be shown that the additional power of referral must be admitted. [8]

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[7] Both Zwicky and Stump argue that rules of referral may be interspersed with rules of exponence, drawing on the usual arguments for feeding and bleeding relations among rules. The issue of ordering is logically independent of the issue of referral versus impoverishment. Some recent versions of DM (Marantz 2000) have accepted the proposal by Trommer (1999) that impoverishment rules are simply a special case of vocabulary insertion rules (i.e., rewriting morphosyntactic features by the empty set, rather than by a phonological string). This proposal allows for a straightforward translation of analyses of a rule of referral (now impoverishment) being overridden by a rule of exponence (here vocabulary insertion) such as Stump's (1993) analysis of exceptions to ablative-dative syncretisms in Vedic Sanskrit.

[8] There is extended discussion of this point in Noyer (1998) and the subsequent commentary (Carstairs-McCarthy 1998) and discussion. Noyer (1998) and Harbour (2001) argue that deletion alone is insufficient and that at least in some cases, when a marked value of a feature is deleted the unmarked value for that feature may be automatically inserted (see also note 10, below). Formal implementation aside, the question is this: do impoverishment rules change feature values from specified to unspecified (deletion, as assumed here) or do they convert marked values to unmarked (Noyer's proposal). Whichever tack is ultimately correct, the restrictiveness point vis-à-vis referral remains, though; rules of referral must be accepted only as the last resort, i.e., the admission that we can in this domain do no better than state the observed facts directly.

One of the cases offered in Stump (1993) to argue both in favour of rules of referral and against vocabulary-item (or 'affix')-based theories of inflection comes from Macedonian verbal inflection. An illustrative subset of the relevant forms is given in (13).

(13)   Macedonian   *padn-* 'fall'   (from Stump 1993:452)

	present			past (imperf)			past (aorist)		
1sg.	padn		-am	padn	-e	-v	padn	-a	-v
2sg.	padn	-e	-š	padn	-e	-še	padn	-a	
3sg.	padn	-e		padn	-e	-še	padn	-a	
1pl.	padn	-e	-me	padn	-e	-v	-me	padn	-a	-v	-me
2pl.	padn	-e	-te	padn	-e	-v	-te	padn	-a	-v	-te
3pl.	padn		-at	padn	-e	-a	padn	-a	-a

The syncretism at issue here is the conflation of 2sg and 3sg forms in the two past tenses. Important for present purposes is the fact that this conflation consists of a 'whole word' syncretism, that is, the forms are syncretic across more than one suffix position. As Stump quite correctly observes (p.453), a naïve vocabulary-based approach (assuming the segmentation indicated in (13)) would treat the absence of *-v-* in the 2sg past tense forms independently from the presence of *-še* in the 2sg imperfective past. This misses the generalization that these two properties conspire to ensure identity of the 2sg and 3sg past forms. To capture the facts, Stump posits the rule of referral in (14a) subsequently formalized in a manner equivalent to (14b).

(14)   a.   In the past tenses, the second person singular has the same form as the third person singular (p. 452)

       b.   Person:2 → Person:3 / [sg, past]

Stump's proposal is clearly a restatement of the description. In particular, the descriptive framework sheds no light on the question of why the syncretism is 2→3 as opposed to, say, 3→2. The impoverishment rule in (15) has the same empirical result as (14) on the assumption

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that third person is a default (either in terms of the rules of exponence in Macedonian or universally, on which see the discussion in Noyer 1997, section 2.1).

(15)   2 → Ø / [sg past]

The impoverishment approach answers the question of directionality; the 2 sg 'cell' is filled by a 3 sg form and not the other way around because deleting a "3" feature (if there is one) will not yield a second person form.[9] Note that the whole-word syncretism follows on the impoverishment account even though vocabulary insertion may be keyed to individual positions (e.g., syntactic terminal nodes). Impoverishment thus provides not only a resolution to two apparent objections to vocabulary-based theories (meta-paradigms, and whole-word syncretisms), it does so in a principled manner, admitting of predictions about impossible syncretisms cross-linguistically, predictions that appear to be largely borne out (see especially Noyer 1997, chapter 2).[10]

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[9] This is also true of the 2sg = 3sg syncretism in Chukchi intransitives, and of the syncretism of 2pl = 3pl in Latin American dialects of Spanish. This latter instance, as described by Harris (1995), is particularly interesting from the perspective of impoverishment since deletion of the feature "2" allows gender features to find expression on the clitics, as they do with 3 person. One potential counter-example is Common Scandinavian of the pre-Viking period (e.g., 6th century) for which Haugen (1982:129) posits an analogical transfer of the 2sg suffix -R (palatal spirant, from *-*z*) to the 3sg in the present tense. In later periods this is clearly the default, occurring throughout the present tense in the modern Mainland Scandinavian languages.

[10] Greville Corbett has drawn my attention to one example where treating the syncretism as retreat to the unmarked case is difficult to maintain, specifically, the paradigm of the Slovene noun *člóvek* 'person' as presented in Evans, Brown & Corbett 2001: 215). In Slovene, the genitive and locative duals are systematically syncretic with the corresponding plurals which would initially suggest treating Dual as [+X, +Plural] with impoverishment of [+X] in these cases (+X → Ø / [Gen, Loc]) ("X" being whatever feature distinguishes among duals and true plurals, for example "limited" or just "dual", see Corbett 2000:chapter 2). Such a treatment appears to run afoul of the stem suppletion patterns of this noun, though, which shows the suppletive stem *ljud-* in all plural forms plus precisely the two syncretised duals. Making just [+Plural] the environment for stem suppletion would falsely predict that *ljud-* should occur in all duals. Formally, what is needed for the Slovene case is precisely the kind of 'persistent redundancy rule' proposed by Noyer (1998), i.e., some mechanism to ensure that impoverishment converts marked to unmarked, rather than specified to unspecified (see note 8, above). There are two ways to implement this for Slovene. First, whatever "X" is, we could assume that [-X] is the unmarked value and then make the suppletion rule sensitive to the context [-X,+Pl]. It must be ensured, of course, that deletion of [+X] by an impoverishment rule will

3. DISTINGUISHING THE FAMILIES OF THEORIES

Let us briefly take stock of where we are. In section 2.1 I argued that the validity of generalizations which we may conveniently describe in terms of meta-paradigms does not provide an argument for paradigms. In particular, this state of affairs does not distinguish between the class of theories incorporating paradigms (as exemplified by Williams 1981, 1994) and the class based solely on vocabulary-items, exemplified by DM. Meta-paradigm effects do not come for free on either approach, and they can be accommodated on either approach by means of devices of similar complexity: stipulated entry points for Williams, impoverishment rules for DM. In particular, what is shown above is that DM, with Impoverishment rules, can account for the appearance of structure within paradigms, without positing that that structure is itself a part of linguistic knowledge.

If the theories were not distinct (and moreover given the independent motivation for impoverishment mentioned in note 6), the parsimony argument would weigh in favour of the vocabulary-item based theories. What is necessary to defend the theory that includes a paradigm "as a real object, and not the epiphenomenal product of various rules" (Williams 1994:22) is a demonstration that not only is there a (possibly emergent) structure to paradigms, but that grammar makes crucial reference to this structure. Williams suggests that this is in fact the case, in particular, he argues that there are universal implicational relationships, imposed by UG, that are crucially only statable in terms of paradigm structures, and not statable in terms of

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trigger insertion of the unmarked value [-X] in this context. It is also formally possible to follow Noyer in treating dual as [-sg, -pl]. To account for Nimboran, Noyer proposes the persistent redundancy rule [-sg] → [+pl] (p.275) which "expresses the universal markedness of [-pl] in the context [-sg]"—i.e., duals. This account extends directly to Slovene, we need only assume that the impoverishment rule is [-pl] → Ø / [Gen, Loc] and the stem *ljud-* is conditioned by [+pl], as above. I leave it to the reader to verify that these analyses account for the facts—at least mechanically—and refer the reader to the discussion in Noyer (1998) and Carstairs-McCarthy (1998) for opposing perspectives on persistent redundancy rules.

vocabulary-based theories, even as supplemented with impoverishment rules. The particular such relationship he proposes is the requirement that there be an instantiated 'basic paradigm' in every language:

(16)   [W]hen 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. We will call that one paradigm the basic paradigm. (Williams 1994:27).

I do not dispute that this basic paradigm requirement crucially relies on paradigm structure, it places requirements on the contents of one paradigm with crucial reference to the content of another paradigm. Thus, crucially, I accept that this requirement cannot be stated as a universal in the theory of DM or in any theory which shares the basic vocabulary-based properties. Thus, if this Instantiated Basic Paradigm requirement is truly a part of UG, then paradigm structure must be a part of linguistic competence, as Williams argues. I will argue in the subsequent subsection that the basic paradigm requirement in (16) is untenable.

3.1   The Instantiated Basic Paradigm Requirement[11]

Williams tenders the following observations about the English verbal system. First, while the pattern of syncretism (what I am calling a meta-paradigm) appears to be quite general, the actual degree of syncretism may vary from paradigm to paradigm. Thus, the verb *be* has seven distinct forms, regular verbs four, and modals only two. This is illustrated in (17) (the letters on the right will be explained presently).

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[11] The discussion in this subsection and the relevance of Russian for Williams's theory is prefigured by Baerman (2000), brought to my attention by G. Corbett (personal communication, 9/2001). Baerman draws a different conclusion, however, and this difference is discussed briefly in the appendix below.

(17) a. be   — is - am - are — was (was)- were — been   =CBA
      b. write — writes   — wrote   — (written) =B,A
      c.   can   — could   — *   =A

The letters on the right in (17) correspond to the entry points in the general English paradigm

structure in (18), repeated from (10) with an additional set of entry points marked for *be*.

(18) English (full)
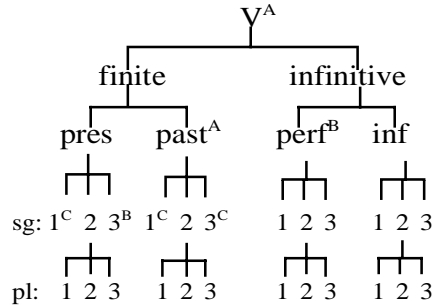
Williams next proposes that the "sets of entry points [for all verbal paradigms in English-

JDB] form a nested set" (p. 25). Thus, while modals only have specified forms for points marked

"A" (hence show no agreement in the present tense), main verbs have specified forms for points

marked both "A" and "B", and the most differentiated verb of all, the verb *be*, has forms for all

nodes marked "A", "B" and "C". Importantly, no verb in English marks a distinction not marked

by the forms of *be*.[12] This is the effect of the basic paradigm requirement in (16).

Note that this requirement crucially refers to relations among patterns of syncretism

(paradigms) within a language. The schematic representation in (19) is equivalent to (16), but

perhaps draws out its paradigmatic nature more clearly. This may be read as saying that, if the

distinction between feature 2 and feature 3 is marked in one paradigm, and the distinction

between feature 1 and feature 2 marked in another, then there will be an instantiated paradigm

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[12] Relative to this particular tree, Williams must treat as accidental the homophony of 1sg and 3sg past forms of BE *was=was*. Likewise, as no node dominates both past and perfect, the fact that verbs that do not have a distinct perfect participle form have a perfect participle identical (in terms of choice of affix—see note 2) to the simple past

marking both distinctions.[13] Given the ubiquitous possibility of accidental homophony, it is important to consider patterns holding among meta-paradigms, i.e., not solely among individual vocabulary items (thus, the letters are to be thought of as variables standing in for ranges of vocabulary items).

(19)   The Basic Paradigm Requirement:

				Basic Paradigm
feat 1	**A**	**C**	$\rightarrow$	**E**
feat 2	**A**	**D**		**F**
feat 3	**B**	**D**		**G**
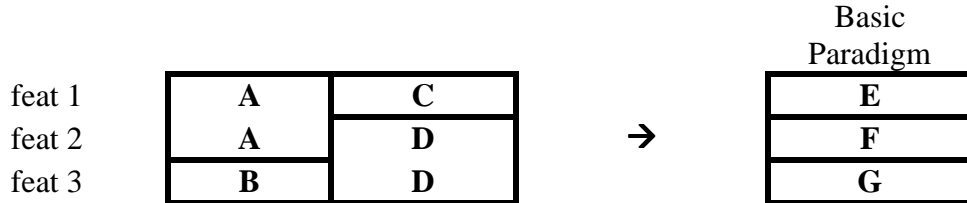
Limiting discussion temporarily to the nominative, accusative and genitive cases, Russian illustrates how (19) is supposed to function. Thus, examining masculine singular and all plural nouns,[14] one finds meta-paradigms fulfilling the antecedent of the conditional in (19). Some paradigms mark a distinction between nominative and accusative=genitive, others between nominative=accusative and genitive (the deciding factor in these cases is animacy). This is illustrated in (20) with the regular endings, but these are true meta-paradigms holding also of those nouns with otherwise 'irregular' declensions such as *mat'* 'mother' (NOM.PL = *materi*, ACC=GEN.PL = *materej*) and *graždanin* 'citizen' (NOM:PL = *graždane*, ACC=GEN.PL *graždan*).

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is left unexplained.

[13] The instantiated requirement is important. Without it, the claim would simply amount to sufficient rationale for positing the existence of a feature.

[14] I make the familiar shortcut of referring to Russian noun classes by gender, though this is technically incorrect. "Masculine" in what follows corresponds to Class I (most masculine and neuter nouns) and "Feminine" to Class II. See Fraser & Corbett (1995) for a careful treatment of the relation of gender to declension class in Russian.

(20)   Russian Nominal Declension

	Masc Animate Singular	Masc Inanimate Singular	Animate Plural	Inanimate Plural
NOM	-Ø	-Ø	-y	-y
ACC	-a	-Ø	-Ø/-ov/…	-y
GEN	-a	-a	-Ø/-ov/…	-Ø/…

The same meta-paradigm structure emerges with adjectives, as illustrated in (21) and with pronouns (not illustrated here).[15]

(21)   Russian Adjectival Declension

	Masc Animate Singular	Masc Inanimate Singular	Animate Plural	Inanimate Plural
NOM	-yj	-yj	-yje	-yje
ACC	-ogo	-yj	yx	-yje
GEN	-ogo	-ogo	-yx	-yx

Given the prevalence of this pattern in the Russian nominal and adjectival system, (19) implies the existence of some other paradigm with a distinct accusative form, i.e., overtly marking the three-way distinction nominative ≠ accusative ≠ genitive. Such paradigms exist, in

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[15] Singular masculine and neuter pronouns follow the animate declension regardless of the animacy of their referent.

the form of the feminine (class II) singular, for possessive pronouns, nouns and adjectives, as illustrated in (22).[16]

(22)   Russian Nominal / Adjectival Declension (Fem. sg.)

	Feminine Noun	Feminine poss. pron	Feminine Adjective
NOM	-a	moj-a	-aja
ACC	-u	moj-u	-uju
GEN	-y	moj-ej	-oj

This fragment of Russian grammar neatly illustrates the functioning of (19) and thus, by (16) we would call the Feminine singular paradigm the Basic Paradigm. But the Russian feminine singular turns out very much to be a false friend for Williams, as becomes apparent when we consider the fuller range of Russian declension.

Russian distinguishes six primary morphological cases (dative, instrumental and prepositional/locative in addition to the three above) and each possible distinctions is made in at least one paradigm in the language. Nevertheless, no single paradigm—not even the personal pronouns—ever distinguishes all six cases (Jakobson 1958:113). The feminine singular in particular systematically fails to distinguish the dative from the prepositional, see (23).[17]

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[16] In order for this subset of Russian declension to be taken as consistent with the Instantiated Basic Paradigm requirement, it is important that the plural be treated as an independent 'paradigm' on an equal footing with the masculine and feminine singular 'paradigms.' If each gender constitutes a single paradigm (with 12 cells, 6 singular and 6 plural), or if the genders are considered independently in the plural, then the syncretisms in the plural would already falsify (19). This point is of course moot in light of the discussion below.

[17] If we were to consider only the regular feminine nouns, the considerations of the previous footnote become relevant. Thus, one could treat the 'oblique' cases (instrumental, dative and prepositional) as constituting a distinct paradigm from the 'direct' cases (nominative, accusative and genitive), in a manner analogous to the treatment of plural as constituting its own paradigm. This would defuse the argument from the syncretism in the feminine regular nouns, but is an impossible direction to pursue given the syncretism of the genitive singular with other oblique forms

(23)   Russian Nominal / Adjectival Declension (Fem. sg.) [expanded]

	Feminine Noun	Feminine poss. pron	Feminine Adjective
NOM	-a	moj-a	-aja
ACC	-u	moj-u	-uju
GEN	-y	moj-ej	-oj
INSTR	-oj	moj-ej	-oj
DAT	-e	moj-ej	-oj
PREP	-e	moj-ej	-oj

The feminine singular thus can not be taken as the basic paradigm because the dative and prepositional are quite regularly distinguished elsewhere, for example in plurals and in the masculine singular (24).

(24)   Russian Nominal / Adjectival Declension [expanded]

	Masc Sg Noun		Plural Nouns.		Plural Adjective	
NOM	-Ø		-y		-yje	
ACC	-Ø	-a	-y	-Ø	-yje	-yx
GEN	-a		-Ø		-yx	
INSTR	-om		-ami		-ymi	
DAT	-u		-am		-ym	
PREP	-e		-ax		-yx (=gen)	

Putting (23) and (24) together, the critical paradox for Williams arises. All (sub-)paradigms that distinguish all three of nominative, accusative and genitive systematically fail to distinguish dative from prepositional. Conversely, all (sub-)paradigms that distinguish dative from prepositional systematically fail to distinguish accusative from either nominative or genitive. There is no Instantiated Basic Paradigm in Russian.

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in the pronouns, adjectives and some nouns (e.g., *r*-stems: *mat'* 'mother', Gen.Sg = Dat.Sg *materi*, and third declension nouns).

4. IMPLICATIONS

Russian nominal declension falsifies the Instantiated Basic Paradigm requirement. To the extent that some languages may have basic paradigms, this cannot have arisen as a property of UG. Nothing in the theory of DM prevents a language having enough vocabulary items to derive maximal differentiation in some (descriptive) paradigms, but one thing that is directly incompatible with DM is the possibility of enforcing a basic paradigm as a universal requirement. Should it have been true, DM would necessarily treat it as an accident from the point of view of synchronic morphology, and would have been forced to seek an explanation elsewhere. But there is no such universal requirement, and thus we find ourselves back at the point with which we began this section. A vocabulary-based approach—incorporating impoverishment—which takes paradigms to be the epiphenomenal result of disjunctive rules of vocabulary insertion, can adequately account for attested patterns of syncretism, even those that stand above particular words, affixes and suppletive relationships. Such a theory is therefore to be preferred on general grounds over one which posits paradigm structure in addition, unless it can be shown that grammar crucially makes reference directly to such structure. In this paper, I have considered one argument of exactly the right kind to establish the existence of paradigms. I have shown, however, that its core prediction is falsified. I conjecture that all arguments for paradigms as real objects will fail in this manner, though I leave demonstration of this for future work.

5. APPENDIX: WILLIAMS´ ?

In closing section 3.1 above, I noted that all (sub-)paradigms that distinguish all three of nominative, accusative and genitive systematically fail to distinguish dative from prepositional

and conversely, that all (sub-)paradigms that distinguish dative from prepositional systematically fail to distinguish accusative from either nominative or genitive. Thus, while there are six basic cases in Russian, the maximal number of distinct forms in any paradigm is five.[18] To be sure, there are many Russian nominal patterns which mark even fewer distinctions; feminine adjectives for example have only three distinct forms (see (23)), the numeral *sorok* 'forty' has only two (the accusative is syncretic with the nominative, of course), etc. On the theory advocated here, the fact that the maximal number of overt distinctions is one (or two) fewer than the maximal number of distributional distinctions is simply the product of the interaction of the inventory of vocabulary items with the impoverishment rules that derive the various syncretisms.[19] This is a true fact about Russian grammar, but an emergent one, not a statement with any explanatory role in the system.

It makes sense at this point to consider what the alternatives are. There are two. First, it could be that statements of the form: "the maximally distinct paradigm must have no fewer than *n* forms" (where *n* is defined by some computation over the paradigm space) are points of

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[18] Strictly speaking, there are two other cases in Russian not considered here, namely the partitive and the locative. The partitive is a special case of the genitive (it is sometimes called the second genitive), and as most items lack a partitive case, the genitive is used in these environments. For the handful of nouns that have do a partitive case (all masculine, singular; no adjectives, pronouns or feminine nouns mark this case) it is always homophonous with the dative singular, thus: *syr* 'cheese' NOM:SG, *syru* PART:SG and DAT:SG, versus *syra* GEN:SG. All nouns with a partitive distinct from the genitive are inanimate and masculine, hence they also show syncretism of accusative and nominative. The locative is likewise a subcase of the prepositional, distinct only in certain masculine singular nouns (it is always marked by stressed *-u*, and is hence segmentally syncretic with dative and partitive, though prosodically distinct). Thus, if the partitive and locative were to be taken as seventh and eighth cases in Russian, the real generalization would have to be that the maximally distinct paradigm in Russian marks six of eight slots. Nouns illustrating this maximally distinct paradigm in the singular are *mëd* 'honey' and *sneg* 'snow'.

[19] The impoverishment of Acc → Nom is a trivial case of retreat to the unmarked. It is less clear that this is so for Acc → Gen. Note, though, that the logic of the system does not require genitive to be overall less marked than accusative. It suffices that genitive and accusative must share some feature distinguishing them from nominative (e.g., Jakobson 1958's Definite), and that accusative have some other feature distinguishing it from genitive (Jakobson's Quantificational). Impoverishment of the Definite feature will yield a "retreat" of accusative to the unmarked (nominative) case, while impoverishment of [-Quantificational] will yield an obligatory "retreat" to the

parametric variation, e.g., language-specific. Alternatively, it could be that statements of this form *are* part of UG, but that Williams happened to have chosen the wrong computation for determining constraints on maximally distinct paradigms.

The first (language particular) approach would suffer from a number of lacunae. The most pressing is to make precise what it could mean to have a language-particular statement of this form as a part of grammatical knowledge. It is known that in addition to having implicit knowledge of grammar (i.e., generative rules, in the usual sense), speakers apparently have implicit knowledge about emergent properties of their grammar. Psycholinguistic evidence has repeatedly shown that speakers are tacitly aware (sometimes in a fine-grained, gradient manner) about the relative frequencies not only of words, but also, for example, of particular sound combinations (see, e.g., Hay 2000). Of course, when the statistical information is language-particular, it is by definition emergent. That is, the child acquiring a language cannot possibly infer statistical trends until the data over which those trends are defined (to wit, the grammar including the lexicon) has been learned. The same considerations apply in the domain of hypothetical paradigm structures. If neither UG nor any independently detectable property of Russian determines that the maximally distinct paradigm is restricted to 6/8 possible case distinctions in any number, this fact is unlearnable until the paradigms themselves and the particular syncretisms embodied in them have been learned. As an emergent property, it plays no role in the explanation of the nature of the grammatical system and is thus, from the perspective of synchronic grammar, accidental. Some account must still be given of the syncretisms observed, an account which is necessarily prior to (and thus independent of) this particular statement. Thus, while Russian speakers undoubtedly do know that no nominal class marks more

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default [Definite] form (accusative → genitive) (cf. Jakobson 1958:113).

than 6/8 case distinctions in any number, this is a part of (possibly tacit) knowledge *about* grammar, and not a part of their knowledge *of* grammar.

The only manner in which a statement about maximally differentiated paradigms could form part of an explanation, as opposed to the description, would be if such a restriction was either predictable on general grounds from some other property of the language (no candidate theories of this sort have been put forward to my knowledge), or if the statement was a direct consequence of UG. Williams's proposal for an Instantiated Basic Paradigm is an example of the latter. Above, I have demonstrated that this proposal is refuted by data from Russian. At this point, it makes sense to revisit the question of whether this proposal was wrong in principle (the conclusion drawn in the body of the paper) or whether it was merely wrong in its particular formulation. In reviewing Williams's proposals, Baerman (2000) appears to take the latter tack, arguing that William's proposal is "*almost* true" specifically that "the number of morphosyntactic slots does not exceed the number of distinct forms in the maximally defined paradigm by more than one, and this seems to represent the upper limit" (p. 1).

Without presenting a detailed review of Baerman's proposal, the highlights are the following. First, Baerman proposes a minimal amount of feature structure on the Russian cases, grouping nominative and accusative as [Direct] and all others as [Oblique]. For any declinable paradigm, the default [Direct] (=nominative) and default [Oblique] (for Russian, this is genitive) forms must be specified. Syncretism is achieved in the normal way, via underspecification (thus, if a particular case form does not have a specific ending, it will take the nearest default—genitive if oblique, nominative otherwise). Finally, Baerman countenances rules of referral which may relate any two arbitrary forms, but imposes a restriction that there be maximally one rule of

referral per paradigm.[20] Hence, if Acc→Gen and Prep→Dat are necessarily achieved via rules of referral (and not underspecification) then no paradigm can show both of these syncretisms simultaneously (although note that feminine singular pronoun does show this pattern: nominative = *ona*; accusative = genitive = *(n)ejo*; prepositional = dative = *(n)ej*).[21]

Note now that Baerman's proposal does not have the effect of deriving the surface-true fact that no Russian paradigm (descriptively) marks all six (or eight) possible distinctions in any number. Baerman's proposal only sets an upper bound (of one) on rules of referral per paradigm, and hence such a pattern could exist (it would simply be a pattern without any rules of referral, of which there are many). Thus, the extent to which Baerman's proposal can be seen as reflecting a position of retreat to a weaker version of Williams's claims depends somewhat on perspective. Like the proposals I have put forward in this paper, the property of Russian that it never expresses all of the distinctions that it could express is synchronically an accident, emerging from the specific patterns of syncretism in each of the various noun classes. In particular, Baerman's proposal allows any number of distinct forms to exist in any Russian paradigm (from one = indeclinable, through two—as in the numeral *sorok* 'forty'; oblique *soroka*—up to unattested six).

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[20] Baerman, like Williams, does not discuss syncretisms across numbers or across declension classes/genders. These can not be underspecification (by definition, as the paradigms are discrete), nor can they be referrals for Baerman, due to the one referral per paradigm maximum, and thus they must be treated as accidents. In this class fall: neuter = masculine in all cases except nominative (pronouns, adjectives, nouns); nominative plural = genitive singular (third declension nouns, e.g., *loshchadi* 'horses'; likewise *r*-stems *materi* 'mothers', and *v*-stems *cerkvi* 'churches; also some second declension nouns, *vílki* 'forks'; etc.), and perhaps others. Baerman's proposal also raises quite starkly questions of what constitutes a paradigm; like Williams, Baerman must treat the plural and singular of an animate feminine noun as distinct paradigms (as there is one referral in each number), and must treat each number and gender of a single adjective as separate paradigms (see notes 16-17 above).

[21] The instrumental *(n)eju* is rarely used, general oblique *(n)ej* being used instead. The *n*-initial forms are used after prepositions (hence always with the prepositional).

More importantly for present purposes, like the impoverishment theory sketched above, and unlike the theories put forward by Williams and Carstairs-McCarthy,[22] Baerman's proposal does not require the grammar to make inferences across paradigms, such as (19). In the terms presented here, Baerman's proposal may be cast as a restrictions on the feature-structure that defines cases, and the make-up of impoverishment rules (albeit one that raises non-trivial questions for the specific theory of DM). It does not, however, involve any statements, nor does it make any predictions, which relate the content of one paradigm to that of another. From the perspective of the questions investigated in this paper, Baerman's proposals are thus not close to those of Williams, in that they do not require the kind of explicit reference to paradigms that Williams makes. While eminently worthy of further scrutiny, Baerman's proposals do not constitute the kind of evidence for paradigms as a part of grammatical knowledge that Williams's Instantiated Basic Paradigm proposal would have constituted, had it been right.

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[22] See, for example, Cameron-Faulkner & Carstairs-McCarthy (2000); for a critical response identifying problems with claims therein, see Halle & Marantz (2001).

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