PARADIGMS (OPTIMAL AND OTHERWISE): A CASE FOR SCEPTICISM*

Jonathan David Bobaljik
University of Connecticut

jonathan.bobaljik@uconn.edu

Revised July 2006

This paper aims to contribute to the debate on the status of inflectional paradigms in grammatical theory, with special reference to the theory of Optimal Paradigms (OP, McCarthy 2005), a particular version of Paradigm Uniformity. OP proposes that certain systematic phonological differences between nouns and verbs should be analyzed as arising from contingent facts about the individual affixes making up the nominal and verbal inflectional paradigms. I argue here that the Arabic data presented in OP does not support the OP model (as against, for example, cyclic alternatives) and that consideration of similar phenomena in Itelmen, a language with richer inflectional paradigms, suggests that it is morpho-syntactic category and not paradigm properties, that determine phonological behaviour.

Keywords: paradigms, noun-verb asymmetries, cycle, syllabification, base, morpheme structure constraints

1. INTRODUCTION

The broad research question in which the following remarks are situated asks: Does grammar ever (need to) make direct reference to the structure or arrangement of information in a paradigm? In other words, do paradigms, as structures in anything like their traditional sense, play a role in (synchronic) grammatical analysis beyond being simply a convenient descriptive device for tabulating various facts? These questions are in turn connected to the issue of locality in grammar—the degree to which the system must consider alternative derivations/representations in evaluating the well-formedness of a given derivation or expression. In previous work, I have attempted to articulate a sceptical position regarding the status of paradigms as domains for the operation of synchronic grammar, addressing arguments from syncretism (Bobaljik 2002b) and from morphosyntactic generalizations involving agreement and verb movement (Bobaljik 2003). In this chapter, I extend this perspective to another aspect of morpho-phonological relations among words, specifically, the type of paradigm-internal identity effect exemplified in the Optimal Paradigms (OP) model of McCarthy (2005) (see also Cable 2004).

In OP, McCarthy proposes that noun-verb asymmetries in morpheme structure constraints in Classical Arabic are epiphenomenal, and certain phonological differences in the syllabification of nouns and verbs are the result of accidental, emergent properties of the classes of inflectional affixes with which nouns and verbs may combine. The

* For discussion of the material presented here and related ideas I am particularly grateful to John Alderete, Seth Cable, Michael Kenstowicz, Alec Marantz, John McCarthy, Glyne Piggott, Susi Wurmbrand, a reviewer for this volume, audience members at Rutgers University at the MIT Paradigms Workshop, and course participants at the 2005 LSA Summer Institute. Portions of the research reported here have been supported by grants from FCAR (2002-NC-75019) and SSHRC (410-2002-0581). I am especially grateful to the members of the Itelmen community who have shared their language with me.

specific analysis that McCarthy presents is claimed to be crucially dependent on the traditional notion of an inflectional paradigm. Constraints on the syllabification of one inflected form exert a synchronic influence on the syllabification of other forms in the paradigm (but not beyond). Put differently, in evaluating the well-formedness of a given word, the grammar must consider not only the pieces of that word and how they are combined, but must also evaluate the phonological well-formedness of other, related words, specifically, all and only the other inflected forms that share a stem—the traditional paradigm. McCarthy's proposals thus have the right form to constitute an argument that the paradigm is "a real object, and not the epiphenomenal product of various rules" (Williams 1994: 22).

In section 2, I argue that McCarthy's paper fails to make the case for the necessity of a paradigm-based analysis on the Arabic data he presents. I argue that key asymmetries that underpin the analysis appear to be inaccurately stated, and that reference to a base even within inflected forms both underlies a potential alternative (3.2.1) and is independently necessary under McCarthy's own account (3.2.2) (see also Albright 2002, this volume). In section 4, I turn away from the narrow discussion of the analysis of Arabic, and to discussion of one leading ideas behind OP, namely, the proposal that phonological differences between classes of stems may be the bi-product of contingent properties of the affixes making up the paradigms in which those stems participate. Arabic, I contend, is a poor language to make this point, since its inflectional paradigms are extremely uniform, and thus the contribution of the morphosyntactic category (noun or verb) is hard to tease apart from the contribution of the affixes. I therefore offer a detailed discussion of syllabification contrasts in Itelmen, where the issues are similar (noun-verb asymmetries in cluster tolerance at juncture) but where the phonological asymmetries track morphosyntactic category and not the kind of accidental properties of individual paradigms that OP would expect. While the issue cannot be resolved from two languages alone, the considerations below, I submit, should at the least raise questions about the validity of the leading idea which OP expresses. Specifically, I contend that scepticism regarding the role of paradigms, in the sense of OP or otherwise, in the analysis of these facts is warranted.

2. OP AND MORPHOLOGICAL RELATEDNESS

2.1 Locality and derivational history

It has long been recognized that morphological structure and relatedness play a role in phonology. A typical example, given by McCarthy, is the difference in syllabification in the English pair *lightning* (two syllables) and *lightening* (three syllables). If it is assumed that both derive from the same segmental input, then one of these should be the optimal syllabification, the other not. For example, if the parse *light.ning* is taken to be the optimal syllabification, why should the trisyllabic parse, with syllabic *n*, be possible, let alone obligatory, for the gerund *lightening*?

A derivational approach to this question would build on the observation that *lightening* is derived from the verb *lighten*. In the verbal form, the parse of *n* as syllabic is required, and this syllabification is inherited by the derived form. By contrast, since *lightning* is not (synchronically) derived from *lighten*, there is no influence from the verb, and the optimal surface syllabification is chosen. In this sketch of an account, morphological relatedness effects reflect the derivational history of a word. Phonological similarity among morphologically related words is the product of the inheritance of prior structure. This is of course the familiar notion of the phonological *cycle* (Chomsky & Halle 1968).

This view is asymmetric and privileges the notion "derived from." phonological constraints on the base form may influence the derived form, but not the other way around. The same asymmetry is recast in mono-stratal OT as *Base Priority* within *Trans-Derivational Correspondence Theory* (TCT, Benua 2000). The cycle and Base Priority can be seen as expressing an idea which I will refer to as the *Local Determination Hypothesis* (LDH), given in (1).[1]

(1) *Local Determination Hypothesis*

To predict the surface form of a word, it is sufficient to know:

The constituent pieces of that word.
Their morphological arrangement / hierarchical structure = derivational history
The phonology of the language.

In putting forward the OP proposal, McCarthy contends that the LDH is false. Specifically, while McCarthy accepts the asymmetry inherent in the notion "derived from" for understanding identity effects in derivational morphology, he claims that "[i]nflectional paradigms are different from derivational hierarchies; in paradigms, all members are co-equal in their potential to influence the surface phonology of other members of the paradigm" (OP: 174). In other words, a central thesis of OP is that the surface form of a word is not locally determinable in the sense of (1). In addition to the information listed there, the following is necessary.

(2) The phonological characteristics of the other members of that word's paradigm.

Put differently, in order to predict the phonological form of some combination Stem+Affix$_1$, it is necessary to know the phonological forms of the set of words {Stem+Affix$_2$, … Stem+Affix$_n$) where Affix$_2$, … Affix$_n$, are the other inflectional affixes that the stem could have combined with. It is this proposal that requires the notion of paradigm in synchronic grammar.

2.2 OP – the proposal and the evidence

McCarthy's primary evidence for OP comes from morpheme structure constraints in Classical Arabic, specifically, restrictions on the templates of verb and noun stems. The basic workings of the theory can be illustrated with one of the examples McCarthy considers, namely restrictions at the right edge of the stem (other examples will be discussed below). Here, one finds an asymmetry between nouns and verbs. Although there are some 15 templates (conjugations) for verbal stems (OP: 178), these templates all share the property that they end in CVC]. No verbal stem template ends in CV:C] or CVCC]. Noun stems, on the other hand, are not subject to this restriction. Although there are significantly fewer noun stem templates than verb stem templates (OP: 209), noun stem templates are more diverse at the right edge, and may freely end in CVC], CV:C] or CVCC]. OP is a proposal to derive this difference from an independent difference between nouns and verbs, namely, the inventories of inflectional suffixes with which noun and verb stems combine. Nominal inflectional suffixes are all vowel-initial. By

[1] The phrasing of (1) glosses over the treatment of non-additive derivation, such as truncation. Benua discusses examples of English nickname formation (for some varieties) where, the derived form contains only a subset of the base, a key example being the English (varietal) nickname *L[æ]r*, derived from *L[æ]rry*, preserving the vowel from the base even though such a vowel is otherwise prohibited in a monosyllabic, *r*-final word. The key aspect of the LDH is the asymmetry, hence (1) could be readily rephrased.

contrast, the inflectional suffixes with which verbs combine are drawn from a mixed array of V-initial and C-initial morphemes.

The theory that links these observations is the following. OP constraints are a species of Output-Output Faithfulness constraints, that place a premium on a stem keeping a constant shape throughout its inflectional paradigm. OP constraints take entire inflectional paradigms as inputs, and incur violations whenever the stem shows an alternation.[2] OP will be satisfied by those stem shapes that are able to freely combine with all relevant affixes. For verbs, which must combine with both V- and C-initial suffixes, this restricts possible stems to those ending in CVC], whereas nouns need only combine with V-initial suffixes, and thus are freer in their stem shapes.

To see this theory at work, consider a hypothetical Arabic verb stem ending in CV:C], */faʕa:l/*, with a long vowel in the second syllable. Given independently motivated constraints of Arabic phonology, such a stem could surface faithfully before a vowel-initial suffix (such as masculine singular *–a*), yielding *faʕa:l-a*. However, before a consonant-initial suffix (such as second person feminine singular, *-ti*), the result of simple concatenation would be **faʕa:l-ti*. This form has a super-heavy medial syllable, something that is categorically disallowed by Arabic phonology. Various alternative candidates would be possible, such as *faʕal-ti*, with vowel-shortening in the closed syllable, and some such candidate should emerge as optimal. Yet whatever 'repair' is chosen to avoid the super-heavy medial syllable, that repair will introduce an alternation into the surface form of the stem in the paradigm: *faʕa:l ~ faʕal*. And it is precisely such alternations that a highly ranked OP Faithfulness constraint proscribes. Parallel considerations apply to stems ending in CVCC], which would also yield an unsyllabifiable sequence at juncture with C-initial suffixes. Because verbal inflection contains C-initial suffixes, only stems ending in CVC] may surface uniformly throughout the paradigm. And thus, only such stems are permitted. For nouns, by contrast, all inflectional suffixes are V-initial; the final C of the stems is thus always syllabifiable as an onset, and the issue of medial super-heavy syllables does not arise. Stem shapes ending in CV:C] and CVCC] are possible alongside CVC].

There is in fact one further step in the theory, which McCarthy dubs the logic of *Stampean Occultation*. The synchronic grammar as just sketched does not in fact exclude verb stems ending in underlying CV:C] or CVCC]. What the grammar forces is, in effect, under- or over-application of the repair. For example, highly-ranked constraints of Arabic phonology force shortening in closed syllables, thus underlying */faʕa:l/* must surface as *faʕal-* before a C-initial suffix *(faʕal-ti)*. OP then "transmits" this shortened form throughout the paradigm; underlying */faʕa:l/* must also surface as *faʕal-* before V-initial suffixes *(faʕal-a)*, the motivation for shortening here not lying within this particular form, but rather in the need to be consistent throughout the paradigm. The result is complete neutralization: underlying */faʕa:l/* (or */faʕl/*) would always surface as *faʕal-*, the surface

[2] Note that under McCarthy's proposal, OP effects are limited to the inflectional paradigm, understood in its traditional sense, i.e., the set of realizations of a single lexeme for the various morphosyntactic features it may bear. This limitation to paradigms distinguishes McCarthy's proposal from other Output-Output Faithfulness proposals such as *Uniform Exponence* (Kenstowicz 1997), *Anti-Allomorphy* (Burzio 1996) and *Lexical Conservatism* (Steriade n.d.), some of which also use the tem "paradigm uniformity." For these latter authors, like McCarthy, morphological relatedness effects are not constrained to the relations "derived from" but unlike McCarthy, are also not constrained to the paradigm in its traditional sense. For Steriade, for example, relatedness effects extend to "a set of words sharing a morpheme… or a set of phrases sharing a word" (Steriade 2000). The restriction to something like the inflectional paradigm is a crucial to McCarthy's analysis (see section 3.2.2 below for discussion), and as my narrow interests concern the nature of paradigms, I will not discuss the other proposals here.

forms would be indistinguishable from those of underlying */faʕal/*. Thus, McCarthy suggests that since the child could never distinguish underlying CVC] stems from underlying CV:C] or CVCC], there would be no motivation to set up distinct lexical representations, and only one of these stem shapes will thus be usable. The logic of occultation is not relevant in the next section, but I will come back to it again in section 3.2.2, suggesting that the argument is incomplete in an important way.

To summarize, the apparent success of OP in explaining the noun-verb asymmetry in stem template inventories constitutes the primary argument against the LDH in (1), and in favour of the richer set of assumptions incorporating (2). The key piece of the argument is the claim of directionality, namely that the phonological influence runs *from* inflected forms *to* the stems contained in them and is thus not statable via the "derived from" relationship. The form **faʕa:l-a* is excluded as an inflected form of a verb, not because anything is locally wrong with that form, but because that form implies a stem-shape */faʕa:l/*, and that stem shape is not combinable with certain other affixes. A further set of considerations (touched on below) leads McCarthy to propose (as noted above) that the deviations from "derived-from" influences lie solely within the domain of the inflectional paradigm. This further step constitutes the argument in favour of paradigms. In the next sections, I address these in turn, showing that the key evidence for directionality, and for paradigms, are not established in the OP paper.

3. STEMS, BASES AND MORPHEMES

3.1 Directionality: Open and closed

The logic of OP uses contingent phonological properties of inflectional morphemes, as a class, to predict the properties of stem shape templates. Because there are C-initial verbal inflectional suffixes, verbal stems may not end in CV:C] or CVCC]. Of course, for this analysis to work the shapes of the inflectional affixes must be known first, and McCarthy states that these must simply be stipulated. Relevant discussion is in footnote 13 of his paper, where the question is attributed to Linda Lombardi. I repeat the note here.

> "This analysis, then, uses the form of the inflectional morphemes to predict properties of the stem templates. Why should the explanation go this way? That is, why stipulate the form of the inflectional morphemes and then use that to explain the stem templates, instead of stipulating the stem templates and using them to explain the inflectional morphemes? The inflectional morphemes are a closed class and they must be listed in any case, but the stems are an open class. The grammar, then, is responsible for explaining which stem shapes are and are not permitted, but it is not responsible for explaining why the handful of noun inflections are all vowel-initial—this is just an accident." (OP: 184, n. 13)

This paragraph goes directly to the heart of the argument for directionality. The key argument for OP is that the Arabic examples are not base-prioritizing, but that the shape of a stem is constrained by properties of the range of affixes which may be added to it. The central argument would be obviated if the stem templates were stipulated, and the influence runs outwards, from stems to affixes, consistent with base priority. As stated in the passage above, McCarthy's argument for the direction of influence from inflected forms to stems relies on an asymmetry in open versus closed classes. I contend, though, that this argument is flawed, and that the key asymmetry is not there. Specifically, the morphemes over which the structural constraints in question are stated (the stems) form no more of an open class than the inflectional morphemes they combine with.

McCarthy's error in the quote above lies in not distinguishing the stems from the constituent morphemes that make up the stems.

A classic insight of autosegmental phonology regarding root and pattern morphology (McCarthy 1981, 1985), now standard textbook fare, recognizes that the stems are morphologically complex objects consisting of at least three distinct morphemes: a root (three consonants in the basic case), a vocalic melody (expressing aspect and voice), and a stem template (CVC pattern). Crucially, under this analysis, the template itself is a distinct morpheme. While the roots form an open class, the stem-forming morphemes (the templates) do not, they consist of a closed class of morphemes, and in fact, a rather small class (15 for the verbs and 7 for the nouns, OP: 209).

This idea is partially illustrated here. The table in (3) gives a sampling of stem forms, with the model root *k-t-b*, showing how in addition to the root consonants, the vowels, and prefixes, the arrangement of consonants itself is a minimal unit of sound:meaning correspondence, i.e., a morpheme. In this case, the "meaning" is the *binyan* or conjugation, indicated by roman numerals in the table, where different conjugations are associated with different meanings such as causative and reciprocal, as indicated.[3] For example, the pattern CVCCVC marks the second conjugation (causative), independent of the choice of root consonant, vocalic melody and prefixes.

(3)

	PERFECTIVE		IMPERFECTIVE	
	ACTIVE	PASSIVE	ACTIVE	PASSIVE
I	katab	kutib	aktub	uktab
II (Causative)	kattab	kuttib	ukattib	ukattab
III (Reciprocal)	kaatab	kuutib	ukaatib	ukaatab
IV (Causative)	ʔaktab	ʔuktib	uʔaktib	ʔaktab

The schema in (4) illustrates the association of the various morphemes to construct example stems.

(4)

```
k   t   b   'write'              k    t    b   'write'
|   |   |                        |   / \   |
C V C V C   'present'/conj 1     C V C C V C   'cause to X' / conj 2
   \ /                              |     |
    a       'active'                 u     i   'passive'
```

Thus even laying aside the vocalism, an inflected verb has at least three morphemes: the root, the conjugation (template), and the inflectional affixes, as in (5), where μ stands for 'morpheme', and linear order is abstracted away from.[4]

---

[3] The table is taken from a larger table in McCarthy (1981: 385), with approximate meanings from McCarthy (1993: 16). John McCarthy (personal communication 2004) points out that the association of templates with meaning is a property of the verbal system, but not of the nominal system. Thus, nominal templates, qua morphemes, would appear to have a role similar to the theme vowels of Indo-European languages, marking membership in a particular inflectional class. This does not bear on the point made in the text, though, so long as these are formally treated as morphemes distinct from the root. See also the next footnote.

[4] In later treatments, such as McCarthy (1993) and Ussishkin (2000), it is proposed that there is only a single template for the verbs (CVCVC) and that all other stem shapes being derived by affixation to this template. If anything, this strengthens the remarks made here. Restrictions on stem shape are morpheme structure constraints holding over a small class of morphemes that are added to roots, not the roots themselves. Also relevant here is a body of psycholinguistic evidence for the independent morphemic status of templates, see for example Boudelaa & Marslen-Wilson (2004, 2005), brought to my attention by Alec

(5) [[[μ1] μ2] μ3]
[[[ROOT] CONJ] INFLECTION]

Thus, when McCarthy talks about "stem shape" he is really talking about the shape of a particular morpheme, μ2, the morpheme that combines with a root to yield a stem (perhaps something like the "little" *v* and *n* morphemes of Marantz 2001, see also Arad 2003 for a treatment of Hebrew root and pattern morphology in these terms). It is the roots that constitute an open class, while the class of stem-formatives (whether seen as templates or affixes) is not only closed but rather small, as noted already. The key asymmetry between open and closed classes that McCarthy appeals to is thus not there. At best, there are two closed classes of affixes, those at μ2 and μ3 in (5). Even if it were granted that the members of one class should be stipulated, and constraints on the other thereby learned (I will challenge this below), McCarthy's argument does not answer Lombardi's question, and thus does not establish the necessity of inwards-running influence.[5] The paper does not provide evidence for one of its key conclusions, namely, the view that the form of the stem is dependent upon the variety of inflectional affixes that stem might combine with, i.e., (2).

3.2 On Bases

McCarthy appears to have another reason in mind, in addition to that just cited, for rejecting a base-prioritizing approach to the Arabic morpheme structure constraints. Specifically, he notes the inapplicability of Benua's TCT / Base Priority model to these cases on the following grounds.

> "TCT is not applicable to inflectional paradigms because it is an asymmetric, base-prioritizing theory… In TCT, the base is the first step in the recursive evaluation. The derived form, which is the next step in the recursive evaluation, is obtained from the base by applying a morphological operation, such as affixation. Inflectional paradigms have no base in this sense…" (OP: 172)

In the Arabic cases that McC presents, inflected forms are obtained from an identifiable morphological unit (the stem), by applying a morphological operation, namely affixation. So why is the stem not the base of inflection (see also Albright 2002, this volume)? As I understand it, the implicit reason that Base Priority is rejected for inflection is that Base Priority is held to be only applicable when the base is an independently occurring word (see Kenstowicz 1997, also Cable 2004; see section 4.2.2 below for criticism). Thus derivation (as opposed to inflection) is derivational, proceeding in a sequential fashion and establishing outputs that OO Faithfulness constraints may refer to. But inflection is not. Phonology does not evaluate inflected

---

Marantz.

[5] Elsewhere in the paper, McCarthy suggests that "OP supports the minimalist goals of Generalized Template Theory (GTT), which seeks to eliminate templates and similar stipulations from linguistic theory, replacing them with independently motivated constraints" (OP: 171). This might be construed as an argument that the templates should be derived, and the identity of the (inflectional) affixes stipulated. At best, OP purports to derive the "template of templates" from independent constraints (i.e., the grammar sets bounds on possible templates), but OP does not derive the identity of individual templates and thus does not in any way obviate the need to state those templates as the individual morphemes (either as templates, or as affixes to a basic template, as in the references cited in the previous footnote), expressing conjugation classes and meanings such as "causative" as noted above. While some aspects (such as the ban on final clusters) may be explained within the system, OP does not eliminate templates as such, and the shape of individual pairings of sound (template) and meaning (conjugation class, etc) must still be learned on an item-by-item basis.

forms in this step-wise fashion. Thus, the stem does not correspond to the output of an evaluation, and cannot be the target of a base-prioritizing OO Faithfulness constraint. Put differently, intermediate stages of a derivation that do not happen to be expressible as words in their own right have no tangible status, and cannot serve as the target of correspondence constraints.

The assumption that inflectional paradigms have no base could provide a theory-internal motivation for rejecting a base-prioritizing (i.e., cyclic) analysis of the Arabic facts, thus perhaps deflecting the criticism of the previous section. I believe there is good reason, though, to challenge the assumption that inflectional paradigms have no base in the relevant sense. On my reading, McCarthy in fact must assume internal to the OP paper that Arabic verbs do have a base in precisely the sense that is needed for Base-Priority, a view that is supported by relatively simple considerations from other languages. The considerations that lead to this view also point to a flaw in the appeal to Stampean Occultation as mentioned above. I treat these in turn, with reference to the OP paper, and return to the general issue of bases again in section 4.2.

3.2.1 Arabic bases

In order to discuss the issue of bases, we must introduce another set of noun-verb template shape asymmetries discussed by McCarthy, this time at the left edge of the stem. Here, the nouns are more restricted than the verbs: noun stem templates may not begin with a cluster, while verb stem templates may. This difference is related (under OP) to the fact that there are CV- inflectional prefixes for verbs (which allow a cluster-initial consonant to be syllabified as a coda), but there are no inflectional prefixes for nouns.

What is important to present concerns is an exception to these restrictions, noted (without discussion) by McCarthy. Specifically, the ban on stem-initial clusters in nouns does not hold of nominalized verbs (OP: 188). These may have [CCV- initial stems. McCarthy shows that OP-faithfulness, combined with the inventory of nominal inflection in the language, should render such stems unusable, all else being equal. Hence, there must be some aspect of the grammar which allows the noun stem to inherit a property of the verb stem across the category-changing derivational morphology.

Within McCarthy's assumptions, there appears to be only one candidate for the force that has this effect, namely Base Priority, adopted by McCarthy elsewhere in the paper for morphological relatedness effects in derivation (OP: 174). The implicit logic is relatively clear—initial [CCV is permitted in verb stems by virtue of the inventory of verbal inflection (via the logic of OP). Base Priority overrides the general restrictions on nouns that ban [CCV stems, by allowing deverbal nouns to inherit phonological characteristics of their verbal base. The problem, though, is that this requires that the verb *stem* (i.e., devoid of inflectional morphology and not constituting a legitimate output in its own right) serve as a base for the computation of Base Priority.

From a derivational perspective, this should be unsurprising. Derivation often runs on stems, even in highly inflecting languages where the stems may not surface as independent words. German strong verbs provide a simple illustration. Verbs like *sprechen* 'to speak' (strong verbs with mid vowels) have the basic inflectional paradigm in (6). Note that the stem is *sprech-*, with the mid vowel *e*; this must be the underlying form in order to predict the other forms, such as the high vowel *i* in the 2nd and 3rd persons singular (and the imperative).[6]

[6] Not all aspects of the vowel quality in the past and participle forms are predictable from the vowel quality of the stem alone, though there are a variety of sub-regularities. For evidence (compelling in my view) that

(6) German *sprech-en* 'speak-INFIN'
also *be-sprech-en* 'discuss', *(sich) ver-sprech-en* 'misspeak', etc.

	PRESENT		PAST		PARTICIPLE
	SG.	PL.	SG.	PL.	
1PSN	sprech-e	sprech-en	sprach	sprach-en	ge-sproch-en
2PSN	sprich-st	sprech-t	sprach-st	sprach-t	
3PSN	sprich-t	sprech-en	sprach	sprach-en	
Imperative:		sprich			

Although the stem is readily identifiable as *sprech-*, this stem does not form a word on its own. For strong verbs of this sort, exactly those members of the inflectional paradigm that have –Ø affixes, namely the 3sg/1sg simple past and the imperative, undergo obligatory stem vowel changes.

Despite the fact that the verb stem never surfaces as a word on its own, it is this stem which forms the base for derivation, as shown in (7).

(7) [[Be-sprech]-ung] 'meeting, discussion' (nominalization *–ung*)
[[Ver-sprech]-er] 'slip of tongue' (nominalization *-er*)

The same point can be made with compounding. Thus *essen* 'to eat' and *treffen* 'to meet' conjugate like *sprechen* in all relevant respects. Like *sprechen*, the stem never surfaces as a word in its own right, yet it is the stem that is the basis for compound formation, as shown in (8).

(8) Ess-lokal 'eating-place' **ess* Imperative *iss*, Past *ass*.
Treff-punkt 'meeting-point' **treff* Imperative *triff*, Past *traff*.

If identity effects in derivation are the result of Base Priority enforcing identity to a base, then it would seem we must conclude that the verb stem is an accessible base in whatever sense is relevant. If correspondence theory necessarily relies on actual outputs (i.e. words) for the running of Base Priority, then such an approach should not be able to enforce identity effects in deverbal derivation in languages like Arabic and German. Although one may avoid an appeal to Base Priority in the analysis of German (simple IO Faithfulness may suffice), for Arabic, Base Priority is crucial, since it is only Base Priority that allows the deverbal nouns to escape an otherwise general ban applying to noun templates.

Thus, it seems that within McCarthy's own data, there is indeed a base in the verb in precisely the sense necessary for Base Priority to apply in de-verbal derivation, shielding the deverbal nouns from constraints that apply to other noun stems. Yet if there is a base for the verb, then it cannot be the absence of a base alone that triggers OP effects.

3.2.2 Bases and Stampean occultation

At this point, I would like to return briefly to the logic of Stampean occultation (see section 2.2). Here, too, I suggest that faithfulness to a base must play an important role in verbal paradigms, despite McCarthy's claim to the contrary. Recall that the logic of Stampean occultation runs, in essence, as follows.

---

the infinitive/present stem is the basic form, from which the others are derived, see Wiese (2004, 2005).

The prohibition of CV:C] (and CVCC]) verbal stem templates is not a matter of synchronic phonology as such. Rather, a CV:C] stem would be forced to undergo vowel shortening before C-initial suffixes. A highly ranked OP constraint enforces uniformity of stem-shape throughout the paradigm, and thus forces overapplication of this shortening. This overapplication yields absolute neutralization with CVC] stems throughout the entire paradigm. The grammar alone does not exclude CV:C] stems, but never being distinguishable from CVC] stems, they would be unusable. As McCarthy puts it:

> "Though the underlying form *faʕaːl* is in principle possible…, learners will never be motivated to set it up as an actual lexical item because it is hidden or 'occulted' by the actually occurring *faʕal*, with which it always neutralizes" (OP: 181).

Recall, though, that OP restricts comparison to the members of an inflectional paradigm. Thus, neutralization forced by OP will not be sufficient to ensure true absolute neutralization, but only neutralization within the paradigm. The logic of OP dictates that *faʕaːl* and *faʕal* neutralize throughout the inflectional paradigm, but the distinction could emerge in the context of derivational morphology. It seems that such a situation should not be excluded in principle. Consider, for example, the English verbs *dam* (to block a river) and *damn* (to condemn to hell). The two are identical throughout the meagre inflectional paradigm of English: [dæm], [dæmiŋ], etc., (note that the present participle is not *dam*[n]*ing*), yet a difference emerges in derivational contexts, compare 'a *dammable* river' [m] versus 'a *damnable* wizard' [mn] (possible, if stilted), also *damnation* [mn], etc. Assuming this example can be shown to generalize, it shows that absolute neutralization in inflectional paradigms is alone not sufficient to trigger occultation. Derivational morphology may reveal underlying differences that are neutralized throughout a paradigm. In theory then, the argument in OP is incomplete, it should be possible for verbs to have underlying CV:C] and CVCC] final templates, where the underlying difference from a CVC] template is revealed only in nominalizations. In order for Stampean occultation to apply, McCarthy must assume that the uniformity of the stem-shape throughout the paradigm is faithfully transmitted into derived forms as well. Once again, the only engine in OP that can achieve this is Base Priority, but that engine requires that the verb have an identifiable base, in the relevant sense.

3.3 Section summary

To summarize the discussion of directionality, I have presented evidence that McCarthy's two arguments against local determination are at best incomplete. In particular, the paper does not, if I am right, provide crucial evidence that it is the inventory of inflectional affixes that determines the shape of the stem template-forming morphemes, as opposed to the other way around. The argument from open and closed classes relied on taking the stem to be a basic morphological unit, rather than recognizing that stem-forming templates are morphemes in their own right. In addition, I have argued that inflectional paradigms must have a base in whatever sense is relevant to Base Priority, within the logic of the system. Hence the general argument that Base Priority (i.e., cyclicity) cannot be used to explain morphological relatedness effects in inflection appears to rest on a questionable premise. For the reasons stated above, I conclude that the crucial ingredients of an argument that any relation beyond "derived from" is necessary are not established in the OP paper. In the next section, I leave specifics of that paper and turn to considerations at a more general level.[7]

[7] In Bobaljik (2002a), I suggested that the core Arabic facts may be accounted for under the stipulation that syllabification in verbs proceeds cyclically, where syllabification in nouns is non-cyclic. Such an account may describe the differences, in particular, in enforcing more stringent syllabification requirements on verb stems. As McCarthy notes (OP: 199) this account essentially stipulates the noun-verb difference in the

4. ITELMEN AND THE SOURCE OF NOUN-VERB ASYMMETRIES

A major aspect of OP, brought out nicely in the discussion in Cable (2004), is the idea that phonological differences among nouns and verbs should not be described by allowing the phonology to make reference to these categories, but instead should be derived from contingent facts about nouns and verbs and their associated inflectional morphology.[8] We have just seen above how the theory is supposed to apply to Classical Arabic. Under McCarthy's treatment, accidental properties of the different classes of inflectional morphemes effect conditions on the stems with which they combine. The explanatory work is being done by paradigm membership, appeal to the categories noun and verb is relevant only indirectly, inasmuch as it determines such paradigm membership.

This conception of the grammar should lead us to expect that when inflectional class and morphosyntactic category diverge, OP effects should track paradigm membership and not morphosyntactic category. We might call this the *thesis of category-neutral phonology* (TCNP). The real interest in OP will lie in testing the TCNP not against Arabic (which has remarkably uniform paradigms) but instead against languages where the relevant phonological differences among paradigms cross-cut the morphosyntactic categories. For example, imagine a language like Arabic, but in which feminine nouns had a consonant-initial inflectional suffix, or in which intransitive verbs (but not transitives) had only vowel-initial inflection. The expectations should be clear: feminine nouns should be restricted to CVC] stem templates, while intransitive verbs should not. I will argue in the remaining sections that Itelmen shows the right kinds of idiosyncratic vagaries among paradigms, but that nevertheless, the phonology neatly tracks the noun-verb divide, rather than the contingent properties that the OP intuition would lead us to expect.

In other words, between the two cases considered here (Arabic and Itelmen), OP effects are attested only where they are indistinguishable from category-sensitivity (Arabic). Of course, it will most likely be possible to describe the data in a manner consistent with the TCNP, for example by appeal to various ancillary assumptions and additional constraints, (see Cable 2004 for a detailed analysis of the Itelmen facts from an OP perspective). However, I maintain that Itelmen shows exactly the kind of divergence between contingent properties of paradigm inventories and category membership that

---

grammar, whereas, he contends, OP deduces it. The discussion above shows that this is only partly correct. All approaches considered have some stipulated difference between nouns and verbs, from which the remaining observed differences follow. The question is whether the OP approach is the right kind of stipulation—arbitrary properties of classes of morphemes. I will argue in the next sections that this is not obviously the right kind of stipulation, and that the categorical distinction is empirically a better one. Positing that verbs are syllabified cyclically and nouns not has the added benefit that it will provide for a uniform analysis of the Arabic facts and those from Itelmen to be presented below. Why might this be the case? One speculation, capitalizing on recent ideas in syntax, is that the cyclic nature of verbal derivation arises because inflected verbs are multi-phasal (in terms suggested by Chomsky 2001) while nouns are not. It is not clear that this will work, but as a research strategy, it seems to me to be a coherent alternative direction to pursue (cf. Barragan & Newell 2003 on Cupeño.)

[8] As a reviewer points out, defending the TCNP in general would appear to be a fairly significant undertaking, in light of a large array of descriptive differences among categories in many languages, such as differences in stress assignment. See Smith 2001 for a survey.

should be the best case for an argument for OP, but that nevertheless, the best predictor of syllabification is category—not paradigm—membership.

4.1 Itelmen syllabification

In order to make the argument just noted, it will be necessary to provide some background on Itelmen phonology. The discussion here is based on Bobaljik (1998) to which the reader is referred for additional detail.

Itelmen (also Itel'men, Kamchadal) is a Chukotko-Kamchatkan language now spoken only by some 30 or so people on the Okhotsk coast of Russia's Kamchatka peninsula. One remarkable property of the language is its striking tolerance of large consonant clusters. Some examples of initial, medial and final clusters of up to five or six consonants are given in (9).[9]

(9)				
	čkpəč	'spoon'	tɸsčŋin	'you are carrying it'
	kłqzuknen̓	'they were'	mskčen̓	'I will make them
	sitɬxpk'eɬ	'with embers'	k'ənsɬxč	'boil it!'

Although consonant clusters may be of arbitrary length, certain consonants are barred from medial position in a cluster. Namely, the [+sonorant] consonants {m, n, ŋ, r, l, z} must be adjacent to a vowel. This yields schwa epenthesis in the environment described in (10), as detected by schwa-zero alternations. [10]

(10) $\emptyset \rightarrow$ ə / $\left\{ \begin{matrix} C \\ \# \end{matrix} \right\}$ __ [+*sonorant*] $\left\{ \begin{matrix} C \\ \# \end{matrix} \right\}$

Some relevant examples of sonority-driven alternations are given in (11).

---

[9] The Itelmen data is mostly taken from my own field notes, supplemented with examples from Volodin (1976). For additional discussion of Itelmen syllabification, with special reference to its implications for Government Phonology, see Tarasenkova (2006). Special transcription conventions include the following: s,z are (I believe) apical, post-alveolar, non-retroflex fricatives, which should therefore be written with an underdot (omitted for typographic reasons); *n̓* represents a glottalized nasal (sometimes written as *ʔn*—whatever its phonetic manifestation turns out to be, it behaves phonologically as a single segment and not as a sequence of glottal stop plus *n*; the historical source appears to be *n + t#*); a superscript ^{w} at the beginning of a word indicates that the whole word is pronounced with pursed lips—a proper characterization of this process awaits further work. Note also that I have suppressed an automatic gemination of single consonants in post-tonic position in the representations. (I am not convinced that all speakers follow this, but it is immaterial to present concerns.) Finally, the reader is cautioned that some aspects of vowel quality in unstressed syllables are not always easy to pin down with certainty (stress is initial except that inflectional prefixes are not counted).

[10] As Itelmen lacks voiced stops (except in loanwords), it is not clear whether the relevant feature is sonority or voicing. The segment *z* is listed as a sonorant on the basis of its behaviour as described in the text; importantly, the voiceless counterpart is not. Note that {β, j} also do not occur cluster medially, but I have not found sonority-driven alternations that would indicate that they participate in the rule in (10). So far as I can tell, nothing in the present discussion hinges on the correct formulation of the rule, so long as it adequately characterizes the range of schwa-zero alternations. Note in addition that there are exceptions at the left edge of the word, i.e., in the stressed syllable, see Bobaljik 1998).

(11)	a.	ɬxəm	~	ɬxm-ɐn̓	'sable' sg, pl
	b.	spəl	~	spl-ank	'wind' direct, locative[11]
	c.	ʷtχəz-xʔal	~	ʷtχz-enk	'road' ablative, locative

Interestingly, there is a sharp phonological contrast between nouns and verbs with respect to sonority-driven epenthesis: verb stems do not alternate. Specifically, all verb stems that have a schwa in the environment described by (10) preserve that schwa even when epenthesis is not necessary. This is illustrated by the pairs in (12), which are representative of all sonorant-final verb stems.

(12)	a.	t-zəl-čen	1SG-give-1SG>3SG	'I gave it.'	
	b.	zəl-en	give-2SG>3SG	'You gave it.'	*zlen
	c.	t-ɬəm-čen̓	1SG-kill-1SG>3PL	'I killed them.'	
	d.	q-ɬəm-in	2IMP-kill-2>3SG	'Kill it!'	*qɬmin
	e.	spəl-qzu-in	windy-ASP-3SG	'It was windy.'	
	f.	spəl-in	windy-3SG	'It was windy.'	*spl-in

In (12a), epenthesis is necessary to shield the /l/ in the verb stem /zl/ from occurring illicitly in cluster-medial position. In (12b), however, the environment for epenthesis is not met on the surface; though locally unmotivated, epenthesis is obligatory, a case of overapplication. The other pairs make the same point.[12]

In Bobaljik (1998), I argued that the N-V asymmetries in syllabification should be accounted for in cyclic terms. Syllabification (and hence epenthesis) proceeds cyclically in verbs, starting with the root, whereas nouns are syllabified only once at the end of the derivation. Since a stem-final consonant will (by definition) not be followed by a vowel on the first cycle, (verb) roots like /zl/ and /ɬm/ will undergo epenthesis before any suffixes are added. In nouns, by contrast, suffixes are added before syllabification is computed.

A key part of the argument for cyclicity in verbs comes from opacity effects regarding the present tense suffix. The present tense suffix has four surface allomorphs: *-s, -z, -əs,* and *-əz*. The alternation in voicing is determined uniquely by the following segment, but the schwa-zero alternation is determined solely by the preceding segment, as follows directly from cyclic application of (10). Examples illustrating the relevant environments are given in (13).

(13)	a.	t-tχzu-**s**-kičen 1SG-stand-PRES-1SG 'I am standing'	b.	ɬeru-**z**-in gripe-PRES-3SG 'she gripes'	c.	ɬ-qzu-**z**-in be-ASP-PRES-3SG 'she is'
	d.	t'-il-**əs**-kičen 1SG-drink-PRES-1SG 'I am drinking'	e.	il-**əz**-in drink-PRES-3SG 'he drinks'	f.	spəl-**əz**-in windy-PRES-3SG 'it is windy'

[11] This particular form is also attested as % spəl-ank; this is not true for most other alternating forms, especially not the plurals.

[12] Treating the schwa as part of the verb root underlyingly would not change the nature of the problem, which would then be stated as a morpheme-structure constraint: noun roots can, but verb roots cannot, end in CR] where R is any [+sonorant] consonant.

The cyclic derivations in (14) show how each of the four allomorphs of the present tense suffix arises. The important derivations are those of (13d) and (13e). The environment in (13e) is similar to that found with verb stems (and to the derivation of *lightening* discussed in section 2). The V-initial suffix should bleed epenthesis; the correct result is obtained by having epenthesis apply before the agreement suffix is added. Similarly, a cyclic derivation explains epenthesis in (13d) which is obligatory on cycle 2, even though the environment is later destroyed by the devoicing rule applying on the next cycle.[13]

(14)

V__C (13a)	V__V (13b)	C__C (13d)	C__V (13e)		
[tχzu]	[ɬeru]	[il]	[il]	Cy1	Root
[tχzu] + z	[ɬeru] + z	[il] + z	[il] + z	Cy2	Present Tense
-----	----	[il **ə** z]	[il **ə** z]		Epenth
[tχzu z] + ki…	[ɬeru z] + in	[ilə z] + ki…	[ilə z] + in	Cy3	Agr
[tχzu **s**] + ki	----	[ilə **s**] ki…	----		Devoicing
t-tχzu-**s**-kičen	ɬeru-**z**-in	t'-il-**əs**-kičen	il-**əz**-in		OUTPUT

This completes the sketch of the basic Itelmen syllabification pattern, from a cyclic perspective. The account relies on a stipulated difference between nouns and verbs, namely that the rule in (10) applies cyclically in verbs, but post-cyclically in nouns. As Cable (2004) observes, the Itelmen facts look ripe for investigation from an OP perspective: on the one hand, the OP philosophy rejects such stipulated differences between morphosyntactic categories, on the other, the putatively cyclic effects are very much of a kind with the syllabification patterns investigated by McCarthy, at least as far as verb roots are concerned. The optimal syllabification in the more restrictive environment (before C-initial suffixes) is carried over throughout the paradigm, even where it is not forced on the surface, yielding overapplication of epenthesis. In the next section, I will present what I take to be the guiding intuition of an OP approach to the Itelmen facts, as exemplified by the careful analysis in Cable (2004), and set out three reasons that I am sceptical of this intuition.

4.2 Cable 2004

Part of the OP research strategy is to derive noun-verb asymmetries in phonology from contingent facts about the inflectional morphemes they combine with, i.e., properties of the paradigms. Itelmen verb roots look like a good target for an OP analysis, extending the epenthesis that is obligatory before C-initial suffixes into the same roots before V-initial suffixes. Unlike Arabic however, in Itelmen there are V-initial and C-initial suffixes in both nominal and verbal inflectional paradigms. How, then, can OP account not only for the behaviour of verbs, but also for the noun-verb asymmetry?

Cable (2004) provides an intriguing suggestion, building on the notion of base discussed in section 3.2 above. As noted there, OP is embedded within a monostratal framework in which correspondences can be evaluated between input and output, and among outputs, but not among intermediate stages of a derivation, where those are not independently occurring words. In Itelmen, as in many languages, verbs are bound morphemes and the verb stem cannot surface as a word in its own right. By contrast, noun stems often do surface in their bare form; this is the most common singular, non-

[13] The examples in the right column of (9) show that cluster-medial /s/ is tolerated; that is, /s/ does not count as a sonorant for the purposes of (10).

oblique form. Cable capitalizes on this difference between nouns and verbs by proposing a subtle change to McCarthy's conception of where OP applies. While McCarthy argues that inflectional paradigms have no base, and hence that Base-sensitive correspondence constraints cannot apply (see quote in section 3.2), Cable suggests instead that the noun stem in Itelmen does count as a base, and that OP applies only to those word classes that lack an independently occurring free base. In keeping with the general OP philosophy, under Cable's approach, it is not inflection versus derivation that is the dimension of variation, but rather the contingent property of whether or not there is a discrete base, as an independently available output, to which O-O constraints can apply.

The deft move that makes this succeed descriptively is that having a base will bleed OP constraints, even if the base-identity constraints are themselves ranked too low to have any effect. Thus there is a constant ranking across categories: OP > syllabification > BaseIdent. Verbs lack a base, hence OP will be relevant and trigger overapplication of epenthesis, but for nouns, the independent base makes OP irrelevant, while at the same time the ranking of BaseIdent under whatever constraints effect syllabification ensures that each form of the noun receives its locally optimal syllabification. The result is alternations in nouns, but none in verbs.

I will proceed now to three arguments from Itelmen, each of which suggests that the N-V asymmetries are about the categories "noun" and "verb" and not about contingent properties of individual lexical items and their associated paradigms.

4.2.1 Category-neutral roots

In Itelmen, some roots have a double life, occurring with the same meaning as both verbs and nouns. One such root is *spl* 'wind' (15a-b), which we have already seen above. However, most verbal roots do not occur as nouns without additional derivational morphology (if at all). Thus, simple nouns corresponding to the stems in (15c-d) are unattested.

(15)	a.	spəl-	verb: 'be windy' (of weather) cf. (12)
	b.	spəl	noun: 'wind' cf. (11)
	c.	zəl-	verb: 'give'
	d.	ɬəm-	verb: 'kill'
	e.	*zəl, ɬəm	unattested as nouns

Occurrence as a free root or not is exactly the independent characteristic which determines whether or not OP applies. Nouns are exempted from the uniformity effect of OP because their root counts as a base. Yet it turns out that the few relevant verbs whose root also counts as a base are not thereby exempted from the OP-driven overapplication of epenthesis. The contingent fact "my root can surface as a word" has no bearing on the phonological behaviour of a verb root. Overapplication occurs in the verb root /spl-/ even though that root does have a corresponding base occurring as an independent word. If anything, the OP research strategy (with Cable's modification to accommodate Itelmen), should lead us to expect the opposite.

4.2.2 Baseless nouns

The opposite problem occurs as well. While it is in general the case that nouns and verbs differ along the dimension of having a corresponding free base, just as some verbs have a root that does occur as an independent word, there are also nouns that lack a base. As far

as can be determined, these nouns behave phonologically like nouns, and not like verbs. That is, they show syllabification-driven alternations in stem form, rather than maintaining a uniform stem throughout their paradigms.

In the preceding discussion, I noted that most nouns bear no overt morphology in the singular, non-oblique form. However, there is a sizeable number of nouns that require a singular suffix that is lost in the plural (Volodin 1976, Bobaljik 2006). These nouns thus lack an identifiable base in the sense of occurring as an independent word. Examples of four classes of nouns taking singular suffixes are given in (16).

(16)		UR	Sg.	Pl.	gloss
	-m	/txtu/	txtu-m	txtu-ˀn	‘dugout canoe’
		/atno/	atno-m	atno-ˀn	‘village’ (also ‘home’)
	-n	/kəmlo/	kəmlo-n	kəmlo-ˀn	‘grandchild’
		/reβla/	reβla-n	reβla-ˀn	‘falcon’
	-ŋ	/qtχa/	qtχa-ŋ	qtχi-ˀn	‘leg’
		/iʔleβeno/	iʔleβeno-ŋ	iʔleβeno-ˀn	‘boat pole’
	-č	/p’e/	p’e-č	p’e-ˀn	‘child, son’
		/xk’i/	xk’i-č	xk’i-ˀn	‘hand’

Another class of nouns showing this behaviour is the reduplicative nouns (see Bobaljik 2006). Such nouns show reduplication in the singular, but no reduplication in the plural. As a result, the base of such nouns never occurs as a free word. The reduplicating nouns themselves fall into two classes; of particular interest here are the ones in (17a) which show a schwa-zero alternation in the root.

(17)	a. alternating bases: [14]			b. non-alternating bases:		
	Singular	Plural		Singular	Plural	
	kəp-kəp	kpə-ˀn	‘tooth’	silq-silq	silq-aˀn	‘meat with berries’
	k’uɸ- k’uɸ	k’ɸə-ˀn	‘claw’	ŋəl-ŋəl	ŋə-ˀl	‘roe, caviar’
	˚čeɬx-˚čeɬx	˚čɬxə-ˀn	‘cowberry’	tam-tam	tam-eˀn	‘growth, tumour’

The nouns in (17a) are base-less, like verbs. Under a TCNP approach, the absence of a base should trigger OP effects, thus uniformity of syllabification throughout the paradigm. However, the nouns in (17a) fail to pattern with verb, patterning instead like other nouns, showing schwa-zero alternations.

As it happens, the relevant consideration for these nouns is not the sonority driven epenthesis discussed above, but rather a minimality-driven epenthesis requiring that all

[14] I believe that what I transcribe as [u] in the singular is the realization of ə before [ɸ], likewise [e] is the effect of palatalization induced by /ɬ/ = [ɬʲ].

words have at least one vowel (including schwa). Minimality-driven epenthesis is needed independently of reduplication, as shown in (18).[15]

(18)	a.	ʷqəsχ	~	ʷqsχ-ɐ̯n/ ʷqsχ-aj	'dog' sg, pl, pejorative
	b.	čkəp	~	čkp-ən/	'fungus' sg., pl.

The fact that minimality, rather than sonority, is at issue in the reduplication patterns opens a possible avenue of account within OP. Nevertheless, the data constitute another example in which differences in word class membership (whether or not there happens to be a free base) turn out to be irrelevant for predicting phonological behaviour, while the basic N-V asymmetry remains.

4.2.3 Transitive-intransitive differences

At this point, let us return to the verbal domain. Itelmen has a fairly rich system of inflectional morphology. Nevertheless, certain quirks emerge. Among these is a distinction between the inventories of morphemes available for transitive and intransitive verbs. This distinction turns out to be quite germane to the present discussion.

Consider again the derivations used to illustrate opacity in (13d) and (13e). The full, cyclic derivations are given here.

(19) a. –V b. –C[-voice]

il	il	Root ('drink')
[il] z	[il] z	Cycle 1 - Tense
[il] əz	[il] əz	Epenthesis (Devoicing N/A)
[iləz] in	[iləz] kičen	Cycle 2 - Agreement
---	ilə **s** kičen	Devoicing (Epenthesis N/A)
iləzin	t'iləskičen	Output

These derivations illustrate opacity since the environment for epenthesis before the present tense suffix is not met on the surface. In (19a) the agreement suffix is V-initial, and _zV is not an environment for epenthesis, while in (19b) the agreement suffix is voiceless, triggering devoicing of the present tense suffix (and we know independently that /s/ is not among the class of consonants requiring epenthesis).

Now, to this point, we have been looking at the distinctions between verbal and nominal inflectional paradigms. In fact, under OP, there should be no a priori expectation that these are the right groupings of morphemes to examine. Rather, the phonological behaviour of a given verb stem should be a product of that verb's "paradigm", i.e., the set of affixes that that verb stem may combine with, even where these are a subset of the affixes in the language. It so happens that for intransitive verbs, all the affixes that may occur after the present tense morpheme will fall into one of the two classes in (19). (The regular transitive paradigm, by contrast, has affixes that begin with a voiced consonant,

[15] While there is some overlap in the application of these rules, they cannot be entirely collapsed. For example, minimality is insufficient to drive epenthesis in (11c), where sonority would not drive epenthesis in (18)—the clusters broken up in those examples do occur medially when minimality is not at issue, cf. (9). Note also that Minimality-driven epenthesis overapplies, occurring in both base and reduplicant, as is readily apparent in (17a). Outside of reduplication, however, minimality-driven epenthesis is truly a last-resort operation, occurring only if no other morphological or syntactic process brings a vowel into the word. There is certainly no requirement that every root or stem have a vowel on the surface.

such as the 3>3 suffix *–nen*, as in *sk-ɔz-nen* [make-PRES-3>3SG] 'he is making it'.) For the intransitive verbs, then, the entire paradigm is opaque. No member of the paradigm of any intransitive verb should ever require epenthesis before the present tense affix, and thus there is no occurring surface form that can serve as the basis for overapplication.[16]

By OP, this difference between transitive and intransitive verbs is exactly the kind of difference that should be relevant, and which should yield different phonological behaviour between these classes. Yet the syllabification patterns are the same for both classes. The divide in Itelmen is between verbs and nouns, not among paradigms with and without (surface) environments for epenthesis.

4.3 Section summary

The considerations from Itelmen just disucssed do not provide a knock-down argument against OP. It is possible to describe the Itelmen facts in a manner consistent with OP (as Cable does, for example, by adducing a sympathy-theoretic account for the present tense syllabification that is distinct from the other aspects of Itelmen verbal syllabification). What emerges though is a conspiracy. A variety of extra measures are invoked, precisely to accommodate a deviance from the expectations of OP. There is a basic asymmetry in Itelmen syllabification between nouns and verbs (possibly the same asymmetry as stipulated for Arabic, see fn. 7), but under Cable's account, this asymmetry emerges as the result of a variety of unrelated properties. The clearest way to appreciate this aspect of the analysis is to consider a variety of "Itelmen-primes," that is, languages which are just like Itelmen but minus one of the various extra considerations that Cable proposes. Indeed, the research program of reducing noun-verb asymmetries to contingent properties of the pieces of inflection would suggest that these Itelmen-primes should be the unmarked case. On this program, it is the phonological shape of the paradigm members that is supposed to be relevant; if transitive and intransitive suffixes differ in a phonologically relevant way, then the transitive/intransitive dimension should be one which the syllabification patterns track.

I submit that no good examples of such an effect have yet been discovered.[17] In Classical Arabic, it happens that paradigm membership and lexical category coincide. Where the two diverge, as in Itelmen, the most straightforward generalization refers to lexical category. I suspect that the Itelmen case, rather than the expectations of TCNP and OP, constitutes the general case. Of course, the making or breaking of such a contention will not turn on the specific analysis of Arabic or Itelmen, but rather on a broader cross-linguistic survey of phonological systems. My money is on morphosyntactic categories and against the TCNP.

---

[16] As far as I can tell, this argument can only be constructed for the present tense marker, since the devoicing does not apply to the other stem-final sonorants, such as *–l, -m*. This makes it technically possible, though ad hoc, to divorce the analysis of the syllabification of the present tense morpheme from the other syllabification patterns in the system.

[17] While the discussion of Arabic and Itelmen is limited to syllabification, Glyne Piggott (personal communication, 2005) notes that OP-induced overapplication should be expected for all kinds of phonological properties of stems that can be affected by the affixes they combine with. Thus, under OP reasoning, one might expect to find a noun-verb asymmetry where all verb stems as nasalized, because some verbal inflectional affixes are nasal, or where all stative verb stems bear a low tone, since some inflections limited to stative verbs have a dominant low tone. This opens the realm of possible examples of OP effects quite wide; time will tell if any convincing examples do emerge.

5. CONCLUSION

OP and Cable's extension provide intriguing analyses of a variety of phonological systems. My primary interest in examining the OP system lies in the question of whether it motivates direct appeal to paradigms as the domain of synchronic grammatical computation. Certainly, OP is formulated in these terms, hence, if the analysis it provides is compelling (as against conceivable, paradigm-free alternatives), then this would constitute evidence for paradigms. I do not claim here to have shown that OP is untenable. However, I hope to have raised some significant questions regarding certain core assumptions, and in particular, to have shown that the key question of direction of influence among morphologically related words has not been sufficiently established. In addition, I have drawn out what I see to be one of the key theses that would bear on the feasibility of OP as a general proposal, namely, the TCNP. For the one language that I have examined in detail that had the potential to tease out the differences between class-membership and paradigm influences (namely, Itelmen), the available data come down suggestively against the TCNP (and hence against OP). Ultimately, the question is empirical and should hinge not on the analysis of one or two languages, but on a larger survey. My (admittedly Itelmeno-centric) hunch is this: such a survey will reveal that lexical category is a recurring predictor of distinct phonological behaviour, whereas the contingent properties of paradigms are not. I would be unsurprised if clever analytic minds will be able to "save" a technical analysis incorporating OP over this range of data, but I will be surprised if OP turns out to be the norm wherever category and paradigm membership diverge (as they do in Itelmen). Why might this be so? The answer, I contend, is the LDH in (1): the computation of grammatical well-formedness is local. To predict the surface form of a word, it is sufficient to know the constituent pieces of that word, their hierarchical arrangement, and the general phonology of the language. Reference to other members of that word's paradigm is neither needed nor possible.

References

Albright, Adam. 2002. *The identification of bases in morphological paradigms*, Ph.D. Dissertation, UCLA,

Albright, Adam. This volume. Inflectional paradigms have bases too, in, pp.

Arad, Maya. 2003. Locality Constraints on the Interpretation of Roots: The Case of Hebrew Denominal Verbs, *Natural Language and Linguistic Theory* **21.4,** 737-778.

Barragan, Luis & Heather Newell. 2003. Cupeño Morphology is inherently stressful, in, *Proceedings of WECOL*.

Benua, Laura. 2000. *Phonological relations between words*, Garland, New York.

Bobaljik, Jonathan David. 1998. Mostly Predictable: Cyclicity and the distribution of schwa in Itelmen, in Vida Samiian (ed.), *Santa Cruz, CA Proceedings of*, CSU, Fresno, pp. 14:28.

Bobaljik, Jonathan David. 2002a. Paradigmaticity without paradigms, Paper presented at Rutgers University, (March 2002).

Bobaljik, Jonathan David. 2002b. Syncretism without paradigms: Remarks on Williams 1981, 1994, in Geert Booij & Jaap van Marle (eds.), *Yearbook of Morphology 2001*, Kluwer, Dordrecht, pp. 53-85.

Bobaljik, Jonathan David. 2003. Realizing Germanic Inflection: Why Morphology Does not Drive Syntax, *Journal of Comparative Germanic Linguistics* **6.2-3,** 129-167.

Bobaljik, Jonathan David. 2006. Itelmen Reduplication: Edge-in association and lexical stratification, *Journal of Linguistics* **42,** 1-23.

Boudelaa, Sami & William D. Marslen-Wilson. 2004. Abstract morphemes and lexical representation: the CV-skeleton in Arabic, *Cognition* **92,** 272-303.

Boudelaa, Sami & William D. Marslen-Wilson. 2005. Discontinuous morphology in time: Incremental masked priming in Arabic, *Language and Cognitive Processes* **20.1/2,** 207-260.

Burzio, Luigi. 1996. Surface constraints versus underlying representation, in Jacques Durand & Bernard Laks (eds.), *Current Trends in Phonology: Models and Methods*, European Studies Research Institute, University of Salford Publications, Salford, pp. 97-122.

Cable, Seth. 2004. *Phonological Noun-Verb Dissimilarities in Optimal Paradigms*, Paper presented at Workshop on (Non)-identity within a paradigm MIT.

Chomsky, Noam. 2001. Derivation by phase, in Michael Kenstowicz (ed.). *Ken Hale: A life in language*, MIT Press, Cambridge, Mass, pp. 1-52.

Chomsky, Noam & Morris Halle. 1968. *The Sound Pattern of English*, Harper & Row, New York.

Kenstowicz, Michael. 1997. Base-Identity and Uniform Exponence: Alternatives to Cyclicity, in J. Durand & B. Laks (eds.), *Current trends in Phonology: Models and Methods*, University of Salford, Salford, pp. 363-394.

Marantz, Alec. 2001. Words. Unpublished manuscript, MIT, Cambridge MA.

McCarthy, John J. 1981. A prosodic theory of nonconcatenative morphology, *Linguistic Inquiry* **12.3,** 373-418.

McCarthy, John J. 1985. *Formal Problems in Semitic Phonology and Morphology*, Garland, New York.

McCarthy, John J. 1993. Template form in Prosodic Morphology, in Laurel Smith Stvan, Stephen Ryberg, Mari Broman Olsen, Talke Macfarland, Linda DiDesidero, Anne Bertram & Larin Adams (eds.), *FLSM III: Papers From the Third Annual Formal Linguistics Society of Midamerica Conference*, Indiana Linguistics Club, Bloomington, pp. 187-218.

McCarthy, John J. 2005. Optimal Paradigms, in Laura Downing, Tracy Alan Hall & Renate Raffeleisen (eds.), *Paradigms in phonological theory*, Oxford University Press, Oxford, pp. 170-210.

Smith, Jennifer L. 2001. Lexical category and phonological contrast, in Robert Kirchner, Joe Pater & Wolf Wikely (eds.), *Papers in Experimental and Theoretical Linguistics 6: Workshop on the Lexicon in Phonetics and Phonology*, University of Alberta, Edmonton, pp. 91-72.

Steriade, Donca. 2000. Paradigm Uniformity and the Phonetics-Phonology Boundary, in Janet Pierrehumbert & Michael Broe (eds.), *Papers in Laboratory Phonology 6*, Cambridge University Press, Cambridge, pp. 313-335.

Steriade, Donca. n.d. *Lexical conservatism and the notion base of affixation.*

Tarasenkova, Oksana. 2006. A Government Phonology account of complex clusters in Itelmen. Unpublished manuscript, University of Connecticut at Storrs.

Ussishkin, Adam. 2000. *The Emergence of Fixed Prosody*, Ph.D. Dissertation, University of California at Santa Cruz,

Volodin, Aleksandr P. 1976. *Itel'menskij jazyk [The Itelmen Language]*, Nauka, Leningrad.

Wiese, Bernd. 2004. Unterspezifizierte Stammparadigmen: Zur Systematik des Verbablauts im Gegenwartsdeutschen. Unpublished manuscript, IDS, Mannheim.

Wiese, Bernd. 2005. Form and function of verb ablaut in contemporary standard German, in Robin Sackmann (ed.). *Studies in Integrational Linguistics*, John Benjamins, Amsterdam, pp. To appear.

Williams, Edwin. 1994. Remarks on lexical knowledge, *Lingua* **92,** 7-34.

http://bobaljik.uconn.edu