PARADIGMS (OPTIMAL AND OTHERWISE):
A CASE FOR SKEPTICISM

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MIT Paradigms Workshop
7 Jan 2004

1. BACKGROUND

The issue:

(1) *Does knowledge of language (grammar) include paradigms (or paradigm structures)?*
[i.e., above and beyond constituent morphemes & rules / constraints for combining them]

➢ The (partial) paradigm in (2a) will be generated/deduced from (2b), with the logic of disjunctivity:

(2) a. PARADIGM-BASED THEORY

	Present		Past	
	Singular	Plural	Singular	Plural
1 psn	play	play	played	played
2 psn	play	play	played	played
3 psn	plays	play	played	played

   b. VOCABULARY ITEMS = RULES OF EXPONENCE

   -d ⇔ PAST
   -z ⇔ 3 SG
   -ø = default / **elsewhere**

➢ what evidence, if any, is there that knowledge of language contains more than (2b) ?

➢ Does the grammar ever make direct reference to the structure of / arrangement of information in a paradigm?

In other work, I have reviewed some of the stronger arguments for paradigms as grammatically significant structures and argued that they are inadequate in one of two ways:

i.   The properties taken to require paradigm structures have direct analogues in paradigm-free theories, and thus do not actually argue in favour of paradigms.

   Williams's (1981, 1994) hierarchically ordered "points of insertion" are directly comparable to Impoverishment in Distributed Morphology (Bobaljik 2002a) (and thus form a proper subset of *Rules of Referral* in Stump's 2001 *Paradigm-Function Morphology*).

ii.   Those properties that do require paradigms as such are not empirically supported on the available evidence.

a. Williams's (1981, 1994) *Instantiated Basic Paradigm* requirement is falsified by Russian (Bobaljik 2002a). This requirement was the only aspect of that theory that literally required paradigm structures (see point i.)

b. "Morphology-Driven Syntax" (Rohrbacher, 1999, see also Vikner, 1997): Pan-Germanic differences in verb-raising are explained by differences in the languages' inflectional paradigms. Empirically challenged within Germanic (Bobaljik 2003)—if any kind of morphological complexity correlates with verb movement, it is structural complexity, NOT paradigmatic complexity.

(3) a. "in most contemporary theories of morphology the notion of 'paradigm' doesn't play any role" (Spencer 1991, 12).

b. "the notion paradigm emerges as an epiphenomenon without theoretical significance" (Müller 2002).

Today's focus:

Some critical remarks on "Paradigm Uniformity" in Phonology

Allomorphy tends to be minimized in a paradigm.

Specific focus: *Optimal Paradigms* (McCarthy 2003)

Most explicit and most reliant on the notion of (inflectional) <u>paradigm</u> (≠ Steriade)

Outline:

➢ Why OP would be an argument for paradigms, as such.

➢ The key argument for paradigmaticity in OP is incomplete, as against a cyclic/Base-Prioritizing alternative.

➢ General contention: it is implausible that paradigms, as OP uses the notion, is a relevant unit of grammatical analysis (and thus for OP effects).

2. WHY WOULD OP CONSTITUTE AN ARGUMENT FOR PARADIGMS?

(4) a. lightning   b. lightening

Assuming these involve the same phonological inputs, one of these should be optimal, the other not: **Morphological relatedness overrides surface optimality.**

(only) b. is (synchronically) derived: *light → light-en → lightening*

the schwa is optimal at the second stage (*lightn*), and is thus preserved in b.

implicit assumption: *lightning* is the optimal syllabificiation of *light-n-ing*

➢ Phonology is recursive—i.e., (the intuition behind) the cycle

Asymmetric: A privileged status is accorded to the relation "derived from"
McC: = Trans-derivational Correspondence Theory (TCT) + Base Priority (Benua 2000)

If all morphological relatedness effects were cyclic / TCT, no evidence for paradigms.

(5) Cyclic / TCT phonology:

The surface form of a word is locally determinable. It is sufficient to know:

> The constituent pieces of that word.
> Their morphological arrangement / hierarchical structure (recursion).
> The phonology of the language.

(6) OP:

> "Inflectional 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: 6)

The surface form of a word is **not** locally determinable, in addition to (5), one must also know:

> The phonological characteristics of the other members of W's **paradigm**.

> (In other words: in order to know the phonological form of STEM+Aff$_1$, you must also know the phonological form of STEM+Aff$_2$…Aff$_n$, where Aff$_2$…Aff$_n$ are the other inflectional affixes that stem could have combined with.)

Aside: In this property, OP stands mid-way between cyclicity/TCT and:

(7) Uniform Exponence (Kenstowicz 1995)) = Anti-Allomorphy (Burzio 1995)) = Lexical Conservatism (Steriade n.d.)

> NB. Both Steriade and Burzio use the term "paradigm uniformity" but do not mean paradigms as inherited from the philological tradition (i.e., primarily inflectional, defined by possible combinations of a lexeme and (the exponents of) Morpho-Syntactic Properties/Features).

> Minimize the differences in the realization of a lexical item (morpheme, stem, affix, word)

> **Intuition**: morphological relatedness effects are not constrained to "derived from" but are also not constrained to the "paradigm" (as traditionally conceived of) but rather extend to "a set of words sharing a morpheme… or a set of phrases sharing a word" (Steriade 1999).

Such effects do not implicate the paradigm as a meaningful grammatical entity (although in a very different way).

The empirical basis of OP:

(8) *Classical Arabic* Morpheme Structure Constraints (MSCs) (the basic case)

    a.   Noun stem-templates may end in a cluster: CC]
            Verb stem-templates may not: *CC]

    b.   Noun-inflection is uniquely vowel-initial suffixes: -V…
            Verb-inflection is mixed: {-V…, -C…}

The suggestion:

(9)   The properties in (8a) are a consequence of the properties in (8b).

N-V asymmetries in phonology (MSCs) are to be derived from contingent facts about nouns and verbs, in particular their associated inflectional morphology.

(10)   Even in a form like: *katab-a*   'wrote-3sg.m'

although surface phonology would allow: *katb-a*

the templatic form of the stem CVCVC is forced
(more precisely *CVCC is blocked)

because that <u>same</u> template must also combine with *–ti*   *katab-ti* '2sg.fem'

(and *CCC: *katb-ti*)

(11)   Indirectly, the phonological effect of the consonant-initial suffixes (prohibiting CC] stems) carries over to those stems even when they do not combine with a C-initial suffix.

(12)   Nouns have only V-initial suffixes, hence are not subject to this effect.

➢ This constitutes the argument that local determination (5) is insufficient; the key point is that the phonological influence runs *from* inflected forms *to* the stems contained in them and is thus not statable via the "derived from" relationship.

➢ In the next section, in part developing an observation of Linda Lombardi's, I will argue that the case for the necessity of this view has not been established in the OP paper.

First, one additional general remark about the system:

These constraining effects arise only within inflectional paradigms.

(13)   Similar restrictions at left-edge: nouns cannot begin with a cluster (no prefixes)
verbs can (CV- prefixes).

But: deverbal nouns can begin with [CCV-   (p. 25)

➢ Inflection vs. Derivation asymmetry: (+ usual caveats)
o The shape of a stem is constrained by the set of *inflectional* affixes it may potentially combine with,
o But is not constrained transitively through category-changing morphology.

➢ A deverbal noun inherits the phonological shape of the **verb** stem (even if that violates other constraints on noun-stem shapes).

(14)   Presumably: Base-Identity (Derivation) > OP (Inflection)

Two remarks (to return to):
1.   As far as I can see, (14) turns out to be a crucial—but unstated—component of the Stampean occultation argument (missing at p.22)
2.   The Base for BI for a deverbal noun should be the verb stem, but in OP the status of the verb stem is unclear: "inflectional paradigms have no base" (p.4). [see §3.4]

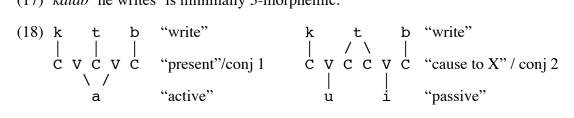## 3. THE DIRECTIONALITY OF ASYMMETRICAL INFLUENCES

3.1 Root and Template Morphology: a textbook view (after McCarthy 1981)

Templates are morphemes = conjugation classes, maybe inflectional/derivational meanings like "causative", "reciprocal", cf. Marantz's *v,n*, etc.; Indo-European theme vowels, etc.)

(15) Classical Arabic (all forms 3sg masc subject;)

	TEMPLATE	"write" *ktb* ACTIVE	PASSIVE
present (X-s)	CVCVC	katab	kutib
cause to X	CVCCVC	kattab	kuttib
X for ea. other	CV:CVC	kaatab	kuutib
make X	ʔVCCVC	ʔaktab	ʔuktib

(16) ROOT + TEMPLATE = Stem

(17) *katab* 'he writes' is minimally 3-morphemic:

(18)
```
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"
```

(19) stem + inflection: katab-**a**, kattab-**a** …   3sg masc, perf.
                                        -**ti**   2sg fem. perf.   etc.

(20) Even ignoring the vocalism (=voice?), inflected verb has min. 3 morphemes:

[[[μ1] μ2] μ3]   linear order not represented   μ1 = root; μ3 = inflection

[[[ROOT] CONJ] INFLECTION]   **μ2 = little *v,n*, etc?**

Since McCarthy systematically distinguishes stems from roots, I assume he ascribes to something like the textbook view sketched above, cf. OP pp: 11-12.

Important: When McCarthy talks about "stem shape" he is really talking about the shape of a particular morpheme, the quasi-derivational morpheme: μ2; the one that combines with a root to yield a stem (perhaps something like Marantz's *v,n*).

3.2 Directionality: Fn. 14.

"This analysis, then, uses the form of the inflectional morphemes to predict properties of the stem templates.

[Lombardi's Question:] 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?

[McCarthy's Answer:] 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* ."[emphasis *is* just *an accid* added –JDB]

(21) The stems are morphologically complex (see above)

- It is the **roots** that are an open class, and the stems an open class only by transitivity.

- The class of stem-forming morphemes (μ2) is mo more an open class than the inflectional morphemes.

  o Keeping in mind: it is not at all obvious that the inventory of inflectional morphemes qua phonologically distinct pieces (vocabulary items) is actually closed. The number is not limited to the product of the morpho-syntactic features that inflection represents (case, agreement, tense etc), given that these vocabulary items may show allomorphy for inflection class; the maximum is thus the product of the number of cells in the inflectional paradigm <u>× the number of inflectional classes</u>. The latter is potentially open, cf. English noun inflection which shows only the opposition singular vs. plural, but the number of actual exponents of plural is greater than 1: -s, -Ø, -(r)en, -i (*fung-us*), etc. The inventory of morpho-syntactic features may be a closed class in any particular language, but it is less clear that the inventory of exponents is closed. In any event, since conjugation class is what is at stake, deciding the issue of open vs. closed will not distinguish between μ2 and μ3 inventories.

- There is only a handful of noun-inflections (n=8 on p.13) but there is likewise only a handful of noun-stem-forming morphemes (n=7 in Appendix B).

(22) The asymmetry that McC appeals to is not there; instead, we are dealing with two closed classes of affixes. McC stipulates that any shape constraints on the outer class is accidental, hence learned, while shape constraints on the inner affixes are derived, but Lombardi's question remains open: why not go the other way?.

(23) Lombardi's (implied) alternative:

Because the (dozen or so) verb templates are what they are, both V-initial and C-initial verb-inflection suffixes are possible, but because the (handful of) noun templates include ones ending in consonant clusters: CC] the nominal inflections are restricted to V-initial suffixes.

Why does this matter?

(24) Lombardi's alternative obviates the crucial argument for OP over cyclic/TCT theories. (23) is "asymmetric [and] base-prioritizing" (cf. OP: 4) and hence statable in TCT / cyclic terms (ultimately faithfulness to the UR of the *v,n* morphemes).

The key point of OP (see McCarthy's intro) is the claim that there exist cases where correspondence is <u>not</u> "asymmetric [and] base-prioritizing."

If Classical Arabic isn't such a case, then it is not an argument for OP (and hence not an argument for paradigms).

(25) Deriving the N-V asymmetry is not (pace Cable, this conference) a primary result of OP, and hence not an argument for it:

View 1 (OP):	The N/V asymmetry at $\mu2$ is a result of an **accidental** N/V asymmetry at $\mu3$.
View 2 (Lom):	The N/V asymmetry at $\mu3$ is a result of an **accidental** N/V asymmetry at $\mu2$.

The OP proposal reduces one asymmetry to another, but still leaves us with an apparently irreducible stipulated difference between nominal morphology and verbal morphology, from which the other difference(s) follow(s).

View 2 reverses the asymmetry, but still retains a stipulated accidental N/V asymmetry.

[As does the suggested stipulation in Bobaljik (2002b) that verbal derivations but not nominal ones are evaluated cyclically/recursively. That stipulation would/could derive the constraints on both classes of morphemes from the grammar, but shifts the "accidental" part to a different kind of stipulation—but has the advantage that it unifies the account of Arabic with that of Itelmen examples in section 3.4.1 which are **not** accounted for by any of the OP/PU/BI proposals prior to Cable; Bobaljik (2002b) conjectures that the cyclic nature of verbal derivations arises from their syntactic multi-phasal nature, cf. Barragan and Newell (2003) on Cupeño].

Is there another argument for View 1 over View 2?

3.3 GTT

p.2 "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."

(26) The Template of Templates (for Verbs)

$$(C) \begin{bmatrix} CV \\ CVC \\ CV: \end{bmatrix} CVC$$

"The verb's templates [are] limited to expansions of this schema." (p.12)

(27) Conjugation 1:   CVCVC
     Conjugation 2: CVC_2C_2VC
             etc.

At best, OP uses independent constraints (including appeal to accidental inventories of surrounding morphemes) to derive (26), that is, to set bounds on possible shapes for the templatic morphemes at $\mu2$.

(28) But OP does not derive the nature of individual templates and thus does not in any way (that I can see) obviate the need to state these templates as the forms of individual morphemes.

Conjugation 1:	CVCVC	can't be: *CVCC, but could have been CV:CVC, etc.
Conjugation 2:	CVC_2C_2VC	ditto.

(29) The asymmetry remains:

Some phonological properties of individual morphemes could be constrained by other aspects of the grammar, but others are simply arbitrary, accidental properties of individual morphemes. Learned. Listed.

OP argues that some (not all) constraints on one group of morphemes may be deducible from properties of the morphemes they combine with.

Even if true synchronically (but see my comments on Cable for scepticism) this can go either way: base-priority or OP. The key argument for OP over other theories (which do not need to rely on paradigm uniformity) lies in the claim that it is the inflectional affixes which are learned and the stem-forming morphemes which are partly-learned.

The two arguments given in the paper don't seem to adequately defend that core assumption.

(30) To the extent there is uniformity in the paradigm, it is because the various inflected forms are all "derived from" the same base, namely the stem. Base-Identity / TCT (essentially: the cycle) prioritizes shape conservation in the stem—the degree to which this holds being a matter of cross-linguistic variation.

3.4 Postscript to the argument: stems

As far as I can tell, one of McCarthy's reasons for not pursuing something like (30) is:

(31) "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…" (p.4)

In the Arabic cases that McC presents, inflected forms are obtained from an identifiable morphological unit (the stem), by applying a morphological operation, in fact affixation.

So why is the stem not the base of inflection?

Because the stem is not a word? (cf. Kenstowicz 1995 Base-Priority: O-O = actual outputs?)

3.4.1 Itelmen

(32) a. light.ning   b. lightening   light
          surface optimal   schwa-insertion   light-en
                                            Base-Priority: [light-en]$_{BASE}$-ing

The pattern in (32b) is replicated in the Itelmen present tense inflection

Even though: (a) this is inflection (so on OP, Base-Identity should not be relevant)
              (b) the relevant base (stem+tense) is not a well-formed word

(33) Consonant clusters may be arbitrary length, but [+sonorant] consonants **must** be adjacent to a vowel. {m, n, ŋ, r, l, z} (no evidence for glides)

(34) $\emptyset \rightarrow \text{ə} / \begin{Bmatrix} C \\ \# \end{Bmatrix} \underline{\quad} [\textit{+sonorant}] \begin{Bmatrix} C \\ \# \end{Bmatrix}$ = Son(ority)Seq(uencing) >> IO-DEP-V;

(35) Verb roots do not show alternations:

Verb stem	C-initial suffix	V-initial suffix
ł(ə)m- 'kill'	t-**łəm**-čeʔn	q-**łəm**-in
	1SG-kill-1>3PL	2IMP-kill-2>3SG
	'I killed them'	'kill it!'
sp(ə)l- 'be windy'	**spəl-qzu**-in	**spəl**-in
	windy-ASP-3sg	windy-3sg

(36) The present tense: suffix, one of four surface forms: -s, -z, -əs, -əz

voicing alternation uniquely determined by following segment,
but schwa-zero uniquely determined by preceding segment = cyclic application of (34).

(37) a. t-tχzu-**s**-kičen   b. łeru-**z**-in   c. ł-qzu-**z**-in
     1SG-stand-PRES-1SG   gripe-PRES-3SG   be-ASP-PRES-3SG
     'I am standing'   'she gripes'   'she is'

     d. t'-il-**əs**-kičen   e. il-**əz**-in   f. spəl-**əz**-in
     1SG-drink-PRES-1SG   drink-PRES-3SG   windy-PRES-3SG
     'I am drinking'   'he drinks'   'it is windy'

(gemination ignored: predictable in southern dialect, absent [?] in northern)

(38)

V__C (37a)	V__V (37b)	C__C (37d)	C__V (37e)	
[tχzu]	[łeru]	[il]	[il]	Root
[tχzu] + z	[łeru] + z	[il] + z	[il] + z	Present Tense
-----	----	[il ə z]	[il ə z]	Epenth
[tχzu z] + ki…	[łeru z] + in	[ilə z] + ki…	[ilə z] + in	Agr
[tχzu **s**] + ki	----	[ilə **s**] ki…	----	Devoice
t-tχzu-**s**-kičen	łeru-**z**-in	t'-il-**əs**-kičen	il-**əz**-in	OUTPUT

➔ (points to Epenth row)

Opacity: devoicing (37d) destroys the environment for epenthesis.
          V-initial suffix (37e) destroys the environment for epenthesis.

NB: (37e) are directly parallel to light-en-ing

Schwa epenthesis is triggered on the intermediate step, though the coda consonant being "saved", can syllabify as an onset on the next step.

If the cycle (qua TCT/Base-Priority) is responsible for light-**en**-ing, it should also be responsible for il-**əz**-in; but…

      -z is inflectional (present tense)
      the intermediate step is not a word: *il-əz

Moral: Inflection is cyclic/recursive in the same way that derivation is cyclic.

The assertion in (31) is at best non-obvious.

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3.4.2 Arabic

There may also be an argument for stem = base within the OP paper: (cf. above)

(39) Left-edge restrictions:

*[CCV…   for nouns   because: *#CC, and no prefixes in paradigm

But OK [CCV for noun IF that noun is deverbal (p. 25)

Why?

Verbs have CV- prefixes in their paradigms,

Since CV-[CCV is syllabifiable, OP allows [CCV to survive throughout verbal paradigm

That deverbal nouns may retain [CCV… must follow from:

(40) Base Identity$_{\text{Verbal Stem}}$ > OP$_{\text{Nouns}}$ (subscripts for exposition only)

(If OP > BI, then the OP effects that exclude initial clusters in non-derived nouns would equally exclude these clusters in derived nouns).

(41) What is the Base to which Base-Identity enforces identity?

➢   The verb <u>stem</u>.

(This shouldn't be surprising in general:
Derivation typically runs on <u>stems</u>, *even when those stems are not words in their own right*.)

(42) German   sprech-en 'speak-INFIN' also be-sprech-en, ver-sprech-en, etc.

present		past		participle
sg.	pl.	sg.	pl.	
sprech-e	sprech-en	sprach-e	sprach-en	ge-sproch-en
sprich-st	sprech-t	sprach-st	sprach-t	
sprich-t	sprech-en	**sprach**	sprach-en	

Imperative: **sprich**

The two members of the paradigm with –Ø affixes both have vowel changes.

* sprech

But it is the verb stem (not the root, as the prefixed cases show) that is the base for compounding and derivation:

[[Be-sprech]-ung]   'meeting, discussion' (nominalization –*ung*)
[[Ver-sprech]-er]   'slip of tongue' (-*er*) < versprech-en 'to mis-speak')

Likewise compounding:

(43) Ess-lokal   'eat-place' <ess-en 'to eat', but *ess: Imper: *iss*, Past *ass*.
      Treff-punkt 'meet-place' <treff-en 'to meet', but *treff: Imper: *triff*, Past *traff*.

3.4.3 More on BI > OP   (aside)

The ranking in (40) is also critical to the argument from Stampean occultation:

The ban on V:C] or CC] in verbal stems is not a phonological ban per se, rather (p.22)

(44) a.   *CCC   observable fact

      b. VC_1C_2] + C_3…   cluster-final stem
            → VC_1_] C_3 …   will simplify (C-deletion) before C-initial suffix
                                  (relevant only to verbs)

      c.   by OP, overapplication of C-deletion

      d.   hence absolute neutralization with …VC] stems throughout paradigm

      e.   Richness of the base, + Stampean occultation

      "Though the underlying form *faʕa:l* 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." (p.16)

As written, see especially p.22, McCarthy appears to assert that the logic of occultation is
confined to paradigms: if two forms neutralize throughout the paradigm, this is sufficient to
occult one of them.

(45) a.   dam [dæm]   b.   damn [dæm]
            V: to block with a dam.   V: to condemn to hell

      Identical throughout their paradigms, but cf.   damnation   → /damn/

If ¬ BI > OP > Faith

Then, verbal templates could end in CC], though this would be occulted in the verbal
paradigm resulting in absolute neutralization, the difference between VCC] and VC] would
reveal itself in deverbal nouns, which—because all noun-inflection is vowel-initial, would
allow the difference to emerge.

Interim Conclusions:

Even within the OP system, the grammar must be able to refer to the (verbal) stem as a base
and to value identity to that base over other phonological constraints (including OP).

It is at least possible (even with the data from OP) to maintain (30) and the asymmetric, base-
prioritizing nature of shape-conservation effects. I.e., the cycle.

McCarthy's suggestion is that the (synchronic) grammar may derive shape constraints on one
set of morphemes from the accidental shared properties of some other morphemes with which
they combine.

The paper itself does not, if I am right, provide an argument for the direction of the influence,
and in particular, does not provide the crucial ingredients of the argument that the influence is
necessarily anything other than base-priority, the effect of the relation "derived from".

4. WHAT'S A PARADIGM?

"an inflectional paradigm consists of all and only the words based on a single lexeme" (OP, 5)

Start with a descriptive formalization, of sorts, partly following Stump (2001):

(46) Given some lexeme Lx   Lx = DOG

    R <Lx,ϕ> is the *realization* of Lx for some set of features ϕ R <DOG,pl> = dogs
                                                      R <DOG,sg> = dog
                                                      R <GO,past> = went

    The *paradigm* of Lx **P(Lx)** is the complete set of realizations of Lx
    for all (sets of) inflectional features appropriate to Lx

(47) Italian nouns (some)—Gender (2) × Numbers (2), no Case = 4 cells

	sg	pl			
m				ragazz-o	ragazz-i
f				ragazz-a	ragazz-e

Combinatorics of inflectional features yields a "paradigm space" (cells);
                           possibly with further hierarchical organization
        (see Matthews 1972, Williams 1981, Anderson 1982, Stump 2001)

➢ Various questions/problems arise in trying to use P(Lx) as anything other than a convenient descriptive device.

4.1 Is the paradigm the right unit for comparison? (=comments on Cable)

The OP research strategy (in part, & the Lombardi alternative):

    Derive N-V asymmetries from contingent facts about nouns and verbs, and their associated inflectional morphology.

Arabic N and V inflectional morphology is (apparently) remarkably consistent throughout the categories.

This is not always the case: in languages where the accidental properties of the morphemes in different paradigms are different (transitive vs. intransitive inflection; masculine versus feminine noun inflection, etc.) the OP architecture predicts that OP effects will track paradigms, not (morpho-syntactic) categories.

Arabic is the wrong language for revealing such effects.

Itelmen is arguably the right language, and the OP hunch is arguably disconfirmed.

4.2 Majority rules: how is the majority established? (minor point)

How is the size of the paradigm calculated?

(48) English verbs (sub-paradigm)   2 numbers × 3 person × 2 tenses = 12 cells

a.

	Present		Past	
	Singular	Plural	Singular	Plural
1 psn	keep	keep	kep-t	kep-t
2 psn	keep	keep	kep-t	kep-t
3 psn	keep-s	keep-s	kep-t	kep-t

b. -d ⇔ PAST
    -z ⇔ 3 SG
    -ø = default / **elsewhere**

Does *kep-t* occupy one cell or six? On theory b., the question has no import, but in a theory that derives majority rules effects, this becomes important. Majority Rules could force vowel shortening or lengthening?

In presenting the Moroccan Arabic paradigm (which illustrates majority rules), distinct surface forms are counted, NOT distinct feature combinations. Thus, there is a gender distinction in third person singular (m vs. f), but not in the plural. Should the common plural count as one member of the paradigm, or as two 3 m pl, 3 f pl, with syncretism?

It happens not to matter in Moroccan.

(49) Many inflectional systems have "obscure" inflectional features.

Russian typically described as having 6 cases and 2 numbers, but:

Some masculine Ns distinguish "2nd" locative from prepositional: *pórte, portú*

A handful of masc Ns distinguish partitive genitive from true genitive: *caja, caju*

A very few nouns have a paucal, distinct from genitive: 'hour' *cása* (gen), 2 *casá*

The syntactic (semantic) differences are in the system:

locative prepositions *v, na* 'in, on' always select 2nd locative if the noun has one, else, the prepositional (=locative), used by other prepositions, such as *o(b)* 'about'

(50) On a non-paradigmatic theory, learning the "2nd locative" involves learning that some nouns happen to be sensitive to an already present syntactic (semantic) distinction, learning a new vocabulary item, plus its context of insertion:

a.   before: … -e ⇔ PREP ____

b.   after: … -ú ⇔ PREP$_{LOC}$ ____ {for some class of nouns}
            … -e ⇔ PREP ____

(51) On a paradigmatic theory, learning "2nd locative" is multiplied throughout the paradigm (presumably) and has the potential to alter the majority rules effects (e.g., for Russian, occurrence with palatal versus non-palatal desinences, or stressed versus non-stressed)

4.3 Periphrasis

"an inflectional paradigm consists of all and only the <u>words</u> based on a single lexeme" (OP, 5)

P(Lx) does not necessarily yield a set of words:

➢ This approach leads to recognizing periphrastic combinations—syntactically complex phrases—in cells.

(52) English scalar adjectives (toy case)

simple	comparative	superlative
big	bigger	biggest
happy	happier	happiest

but…

intelligent	* intelligenter	* intelligentest
	more intelligent	most intelligent

R <BIG,comparative> : *bigger* :: R <INTELLIGENT,comparative> : *more intelligent*

(53) Latin perfective passives are periphrastic (Embick 2000)

	perfective (active)	imperfective passive	perfective passive
1sg	am-ā-v-ī	am-or	am-ā-t-us sum
2sg	am-ā-v-istī	am-ā-ris	am-ā-t-us es
etc			participle + be-INFL
			(not necessarily surface adjacent)

(54) Deponent verbs: <u>active, transitive syntax/semantics</u>, but passive morphology

Including periphrasis in the perfective (without passive syntax/semantics)

	imperfective	perfective
regular passive	am-or	am-ā-t-us sum
deponent **active**	hort-or	hort-ā-t-us sum
etc		participle + be-INFL

R <Lx,perfective> yields a word for Lx = *amō*, but a phrase for Lx = *hortor*.

➢ Nothing guarantees that R <Lx,φ> will yield a <u>word</u>.

For OP to be limited to "all and only the words based on a single lexeme", there must be a **prior calculation** not just of the paradigm space (the feature-defined set of candidates in the paradigm) but some function determining which members of P(Lx) are words.

This function has access to information about phonological shape and lexical diacritics (such as [deponent]).
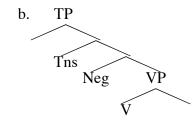
<u>Arguably, this function is syntax.</u>

(55) English: R (LEAVE,past) = *left*… right? (not so fast…)

        synthetic: left
        analytic: did not leave   *not left

(56) a.   TP   b.   TP

     Tns   VP   Tns
          V   Neg   VP
                                         V

➢ The combination of morpho-syntactic features with lexemes (roots, stems) is at least in part a function of the syntactic structure. (Tns + V in (56a) but not in (56b))

    A paradigm (as an extra-syntactic paradigm space) fails to capture that observation.

(57) Embick (2000)   the distribution of analytic (periphrastic) versus synthetic forms in Latin is also determined by/after the <u>syntax</u>; verb movement to T/Infl yields synthetic forms, periphrasis is an outcome of failure of the heads to combine in the syntax.

➢ The combination of features with a root/stem is a <u>syntactic</u> function

➢ To say the paradigm is the set of inflected forms of a lexeme in a manner similar to (46) then amounts to the claim that

    o the "paradigm" of Lx is the set of (morpho)-syntactic contexts in which Lx may occur.

But that notion, too, appears to be of little use to an OP-like comparison.

Subsection summary:

> ➢ Assuming that OP is equipped to compare only word-like units (discrete phonological strings), it is not clear that there is a notion of 'paradigm' that yields a collection of such units.
>
> ➢ The implied notion of paradigm in OP does not.

Since McCarthy gives no clues as to his views on the morphology-syntax interface, going any further will be even more speculative. What I hope to have suggested here is that the matter is not trivial, and that the implied notion of paradigm necessary for running OP (and similar models) is not obviously sustainable.

Conjecture: any combination of features which may be expressed as a single word in some language ("an inflected lexeme") may also be expressed periphrastically (elsewhere in that language or perhaps in some other language).

(58) Contention:

It is implausible that P(Lx) has any phonological (or grammatical) status.

It is not clear what other notion of paradigm might substitute so as to achieve the results needed for the Paradigm based approaches to morpho-phonological relatedness.

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