Blocking and Paradigm Gaps

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Abstract

Based on data from Hebrew and Latin, we argue that paradigms are not morphosyntactic primitives nor are they the result of competition between forms. Contrary to competition-based approaches to inflectional paradigms, we show that systematic paradigm gaps in these languages are true gaps; the system may or may not be able to generate a certain form, but in neither case is this form considered in comparison to other forms. For Hebrew, we demonstrate that the lack of synthetic non-finite passive forms is not the result of competition with their analytic counterparts. For Latin, we revisit previous analyses of nonactive voice (Embick 2000; Kiparsky 2005) and show that a locality-sensitive, morpheme-based approach (Halle and Marantz 1993) is superior both empirically and conceptually to a theory that generates forms in a putative lexicon and has them compete against each other. Paradigm gaps are thus shown to be better analyzed as the result of syntactic structure building.

Keywords: morphology, syntax, Hebrew, Latin, paradigm gaps, nonactive voice, passive

1   Introduction

The existence of paradigm gaps poses a number of questions that any theory of morphology must contend with. For example, Latin has nonactive and perfect suffixes, but the two cannot be concatenated to create a morphological nonactive perfect. This is a paradigm gap. Why do certain forms not exist? Can the concepts behind these impossible forms be expressed otherwise, and what is the relationship between the unavailable forms and their possible paraphrases?

    We argue here that these are questions whose answers can be found in the syntax. The following answers will be motivated: certain forms cannot be generated because of independent constraints in the syntax; sometimes similar concepts can be expressed,

but the forms that express them are the result of distinct structures and so are not exact paraphrases; and consequently, there is no relationship between the unavailable form and its paraphrase. We will argue against a competition-based approach to paradigm gaps, more specifically, the theory outlined in Kiparsky (2005) and utilized in Kiparsky (2010). Under this lexicalist view, paradigm gaps are a result of blocking between competing expressions. In contrast, our claim echoes the arguments made by Embick (2007) and Embick and Marantz (2008). These works argue that recourse to blocking can be avoided. Embick (2007) reduces the synthetic-analytic alternation in comparatives and superlatives to constraints on syntactic and post-syntactic operations. Embick and Marantz (2008) reduce what is often seen as blocking between words to competition among individual morphemes at voabulary insertion, rather than larger structures. Here we identify yet another possibility, viz. true paradigm gaps, where no forms are generated by the syntax in the first place.

As a case in point, take Hebrew passives, to be discussed in finer detail in the following section. The passive infinitive does not exist, but at first blush it looks like the same concept can be expressed using an analytic construction comprised of an auxiliary (the copula) and the passive participle (i.e. the present passive form). One might be tempted to claim that the analytic form blocks the synthetic form.

(1)   The "synthetic-analytic alternation" in Hebrew passives for the verb *serek* 'he combed'

	Active	Synthetic passive	Analytic passive
Past	*serek*	*sorak*	*haya mesorak*
Infinitive	*lesarek*	——	*lihiyot mesorak*

In section 2 we describe the Hebrew passive system and show that the analytic form is not equivalent to the would-be synthetic form. The existence of infinitival analytic passives is independent of the nonexistence of the infinitival synthetic passives. Section 3 revisits the discussion of Latin in Embick (2000), Kiparsky (2005) and Haugen and Siddiqi (2013). Section 4 shows how a syntactic approach can account for a range of locality effects that its alternatives cannot immediately handle. Section 5 gives an overview of the arguments for competition in Kiparsky (2005) and points out what we see as their weaknesses. Section 6 concludes.

2   The Hebrew Passive

2.1   The gap

The Hebrew verbal system is comprised of seven verbal templates which encode a range of verb meanings and argument structure alternations. A given verb is an in-

stantiation of an abstract consonantal root in a template; verbs are constructed from roots by inserting a syllabic template realized as vowels between the root radicals and possibly adding other affixes (Doron 2003; Arad 2005; Kastner 2015). We follow convention in using the $\sqrt{\text{XYZ}}$ notation for a triconsonantal root.[1]

Table 1 exemplifies with the root $\sqrt{\text{PKD}}$, denoting the general semantic field of "counting", in all seven templates.

	Template	Mnemonic	Gloss	Past	Present	Future
1	XaYaZ	simple	'order'	PaKaD	PoKeD	yiFKoD
2	niXYaZ	middle	'be absent'	niFKaD	niFKaD	yiPaKeD
3	XiYYeZ	intensive	'command'	PiKeD	meFaKeD	yeFaKeD
4	XuYYaZ	intensive passive	'be commanded'	PuKaD	meFuKaD	yeFuKaD
5	hiXYiZ	causative	'deposit'	hiFKiD	maFKiD	yaFKiD
6	huXYaZ	causative passive	'be deposited'	huFKaD	muFKaD	yuFKaD
7	hitXaYYeZ	intensive middle	'ally himself'	hitPaKeD	mitPaKeD	yitPaKeD

Table 1: Finite forms in the Hebrew verbal system

The puzzle we seek to solve centers on the two passive templates *XuYYaZ* and *huXYaZ*. The shaded cells in Table 2 show the systematic gap—there are no passive infinitives or passive imperatives.[2] Instead, analytic forms are used.[3]

	Template	Mnemonic	Gloss	Infinitive	Imperative	Verbal noun
1	XaYaZ	simple	'order'	LiFKod	PKoD	PKiDa
2	niXYaZ	middle	'be absent'	lehiPaKeD	hiPaKeD	hiPaKDut
3	XiYYeZ	intensive	'command'	leFaKeD	PaKeD	PiKuD
4	XuYYaZ	intensive passive	'be commanded'	—	—	
5	hiXYiZ	causative	'deposit'	lehaFKiD	haFKeD	haFKaDa
6	huXYaZ	causative passive	'be deposited'	—	—	
7	hitXaYYeZ	intensive middle	'ally himself'	lehitPaKeD	hitPaKeD	hitPaKDut

Table 2: Non-finite forms in the Hebrew verbal system

In addition, there is only one verbal noun that can be used for a pairing of active and passive templates, similar to the case of nominalizations in English, for instance *hašmada-t* 'destruction' (roughly similar to "action nominalizations" or the *masdar* in

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[1]A semi-regular spirantization rule turns /b/, /k/, /p/ into [v], [x], [f] postvocalically. This process is bled in certain templates, in which case we will represent the middle radical as a geminate, in accordance with the diachronic origin of the phenomenon.

[2]The imperative form given here is the standard form. Contemporary usage often prefers the future form or a truncated version of the future (Bat-El 2002).

[3]An infinitival synthetic passive has been attested a handful of times in writing. Even so, this happens arguably only in a jocular way in written form, never in actual speech. There is not enough data to generalize from since this form is exceedingly rare.

various languages):[4]

(2) a. *hašmada-t*   *ha-oyev*   *et* *ha-ir*
         destruction-CS the-enemy ACC the-city

         'the enemy's destruction of the city'

     b. *hašmada-t*   *ha-ir*   *al-yedey ha-oyev*
         destruction-CS the-city by   the-enemy

         'the city's destruction by the enemy'

We analyze the patterns next and then proceed to discuss possible paraphrases.

2.2   Why the gap cannot be filled

We take Hebrew passives to be brought about by the head Pass, which attaches above VoiceP (Doron 2003; Alexiadou and Doron 2012). This configuration captures the fact that passive verbs are always derived from active verbs via direct composition and that their meaning is predictable. We use the following selectional requirement to capture the generalization observed so far:[5]
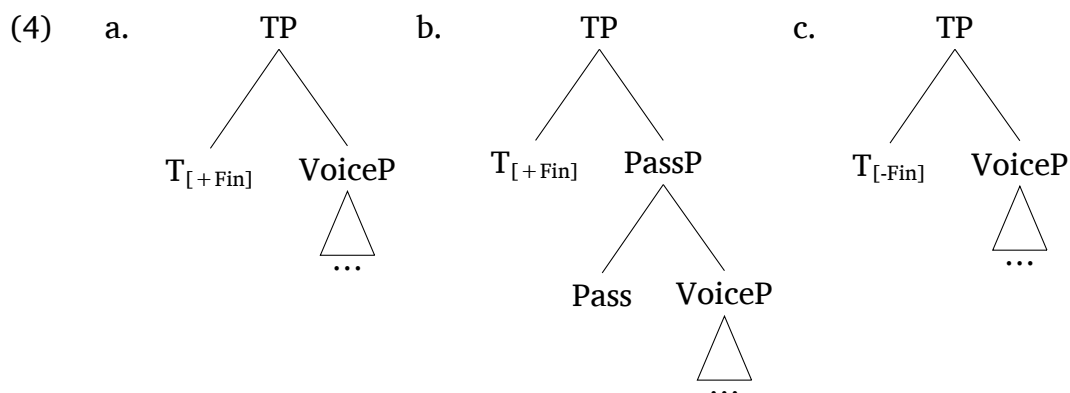
(3)   In Hebrew, only finite T[FIN] can license PassP; nonfinite T[-FIN] only selects for VoiceP.

Recall that passive forms exist in the past, present and future but not in the infinitive or imperative, and that one form is used for verbal nouns of both actives and passives. The apparent syntactic property that unifies infinitives, imperatives and verbal nouns is non-finiteness. The **infinitive** is non-finite by definition and does not license Pass in accordance with (3). **Imperatives** have been argued to lack T (Platzack and Rosengren 1998) or at the very least not to require tense features on T (Zanuttini et al. 2012). Hence there is no finite T to license Pass.[6] Finally, **action nominalizations** have also been argued to lack TP (Hazout 1995) and as such do not license Pass. Thus we see that the verb forms which do not have a passive counterpart in Hebrew form a natural class. Assuming that synthetic verb forms in Hebrew are a result of combinations of a root and the syntactic heads T, Pass, Voice and v, the lack of non-finite passives is expected since (3) only leaves us the following three options to choose from.

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[4]Abbreviations used: ACC accusative, CAUS "causative" template, CS Construct State, F feminine, FIN finite, IMP imperative, INF infinitive, INTNS "intensive" template, MID "middle" template, NACT nonactive, NOM nominative, PASS passive, PASSPTCP passive participle, PERF perfect, PRES present, PL plural, REFL reflexive, SBJ subjunctive, SG singular, TH theme vowel.

[5]It is an open question whether the statement in (3) can be reduced to other parts of the grammar. A similar gap exists in Arabic, and it would be interesting to see in the future whether the two languages can be analyzed similarly.

[6]In general, passive imperatives are odd pragmatically and seem rare crosslinguistically.

(4)   a.   TP   b.   TP   c.   TP
           ⟋   ⟍   ⟋   ⟍   ⟋   ⟍
      T$_{[+Fin]}$ VoiceP   T$_{[+Fin]}$ PassP   T$_{[-Fin]}$ VoiceP
                  ◹◸   ⟋   ⟍   ◹◸
                  …   Pass   VoiceP   …
                                              ◹◸
                                              …

Let us now return to our main question: is there *competition* between forms in the Hebrew passive?

2.3   Analytic forms

The fact that verbs have passive forms implicates the existence of a potential slot for the passive variant of any verbal stem. Under a standard view of blocking, certain verbs (e.g. English *give*) do not have regular inflection (**gived*) because an alternative irregular form (*given*) has already filled that slot. On some level, the listed form is said to "beat" the regular form. However, there are cases where it is hard to argue for the existence of such slots, or structures. For instance, in languages without impersonal passives, unergative verbs do not have passive counterparts (e.g. English *danced*). These generalizations express systematic gaps and we take them to be a result of non-generation in the syntax.

In their discussion of blocking effects, Embick and Marantz (2008) note that for a pair such as *thief* and *stealer*, it is commonly assumed that competition between the two forms leads to specially "listed" *thief* blocking "default" *steal-er*. However, these authors argue that both forms are generated independently, from separate roots $\sqrt{\text{THIEF}}$ and $\sqrt{\text{STEAL}}$. Under their view, there is no competition at the word level. *Thief* is preferred to *stealer* because of the nature of the suffix *-er*. This suffix attaches more easily to verbs that have habitual readings such as *work*. As a result, *stealer* is perfectly possible in constructions such as *base-stealer* and *scene-stealer* which have habitual interpretations. *Stealer* on its own might be odd for the same reasons that a form like *breaker* sounds odd, even though *breaker* is not blocked by a competing, listed form. Yet on a basic version of a competition-based view, the existence of *thief* is expected to block *stealer* across the board.

We argue that the "synthetic-analytic alternation" in Hebrew should be analyzed in the same way. In Table 1 above, the "Present" column gives the participial form

for each template: this form can be used as a present-tense verb, as a nominal or as an adjective (Boneh 2013).[7] It is possible to generate structures of the form COPULA + PARTICIPLE; the question is how these are interpreted. We claim that just as *thief* and *stealer* should be treated separately, the synthetic forms (5a) and the analytic forms (5b) are generated independently.

(5) a. Synthetic future verb:
maxar   ani oxal/aklit
tomorrow I   will.eat.SMPL/will.record.CAUS

'Tomorrow I'll eat/record something.'

   b. Analytic future with a participle:
??*maxar   ani eheye   oxél/maklit*
tomorrow I   will.be eat.SMPL.PRES/record.SMPL.CAUS

(int. 'Tomorrow I will be eating/recording.')

In general, the forms in (5a) are preferred to those in (5b). Nevertheless, the latter can be used when the participle is used in a generic context as a noun, as in "eater of vermin" (6a) or "recorder of things" (6b).

(6) a. Analytic use of the simple participle:[8]
az tagidi,   še-rak   ani eheye oxél   šracim ve-š'ar
so say.2SG.F.FUT, COMP-only I   will.be eat.SMPL.PRES vermin and-rest
mini   basar ha-'asurin   al yehudim? ;-)
kinds.CS meat the-proscribed on Jews

'So say so! What, you want me to be the only one here who eats vermin and other kinds of meat that are proscribed for Jews? ;-)'

   b. Analytic use of the causative participle:[9]
kanir'e   še-ani eheye maklit   kavu'a šel ze
probably COMP-I will.be record.CAUS.PRES constant of this

'Looks like I'll be the one recording this', 'Looks like I'll be a constant recorder of this'

   Returning to passives, take the "intensive" verb *SiReK* 'combed'. It has a passive counterpart, *SoRaK* 'was combed'.[10] Analytic forms of the passive infinitive and imperative forms are likewise made up of an auxiliary (the copula) and the participle (present) form:[11]

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[7]The "simple" template has distinct active and passive participles; the distinction is not important for our current discussion.

[8]http://www.tapuz.co.il/forums2008/archive.aspx?ForumId=1277&MessageId=96791273 (retrieved November 2014)

[9]http://www.forumtvnetil.com/index.php?showtopic=18312 (retrieved November 2014)

[10]The underlying /u/ in /surak/ lowers to [ɔ] before /ʁ/, though this varies from speaker to speaker.

[11]The analytic form of the imperative is very limited in use and sounds unnatural to some speakers.

(7) a. *ani roce   lihiyot mesorak*
         I   want to.be comb.INTNS.PASS.Pres

         'I want to be combed.'

  b. %(*ti*)*hiye   mesorak!*
         be.IMP/FUT comb.INTNS.PASS.Pres

         'Be combed!', 'Get combed!'

We observe two important differences between the synthetic and analytic forms throughout the language. First, whereas the analytic forms may have an **idiomatic reading** (8a), synthetic passives (8b) are always compositional.[12]

(8) a. *ze yihiye muvan   me-elav*   (idiomatic)
         this will.be understand.CAUS.PASS.Pres from-to.him

         'It will be self-evident.'

  b. #*ze yuvan   me-elav*   (literal)
         this understand.CAUS.PASS.Fut from-to.him

         (no immediate clear meaning)

Second, synthetic passives force disjoint readings in which the external argument and the internal argument cannot refer to the same entity (Baker et al. 1989). The analytic form (9a), with the participle, allows **coreference** (Sichel 2009:720) whereas the synthetic form (9b) does not:

(9) a. *ha-yalda hayta mesorek-et*   (agent $=/\neq$ theme)
         the-girl was   comb.INTNS.PASS.Pres-F

         'The girl was combed.'

  b. *ha-yalda sork-a*   (agent $\neq$ theme)
         the-girl   comb.INTNS.PASS.Past-F

         'The girl got combed.'

The synthetic and analytic forms are not equivalent, then. This is not surprising from our perspective, since the two forms are generated independently of one another. On the one hand, the data in (5) show that the synthetic form is preferred to the analytic form in certain environments. On the other hand, the data in (8) show that the analytic form is preferred in other environments. And as the data in (9) show, it can well be the case that both forms are possible, albeit with different interpretations. There is no sense in which one of the two consistently blocks the other: the synthetic passive is a passive verbal form while the analytic form is basically an adjectival passive.

(10) a. Synthetic *sorak*: [T$_{[Past]}$ [Pass [Voice [v$_{intns}$ $\sqrt{\text{SRK}}$]]]]

   b. Analytic *haya mesorak*: [T$_{[Past]}$ [Voice [v$_{be}$ [a/n [v$_{intns}$ $\sqrt{\text{SRK}}$]]]]]

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[12]For additional discussion of the idiomatic readings of participles in Hebrew see Horvath and Siloni (2009) and Meltzer-Asscher (2011).

To summarize, Hebrew builds passive verbs from active verbs, but these passive forms do not have "morphological" (synthetic) infinitive or imperative forms. Analytic constructions may be used to convey similar meanings to the would-be synthetic passive, but these constructions employ the passive participle/present, a configuration that leads to two differences between synthetic and analytic forms: idiomatic readings and possible coreference of internal and external argument. We apply similar logic to Latin next.

3   Latin Nonactive Voice

In this section we revisit the analysis of the Latin nonactive proposed in Embick (2000), recasting it in a locality-based approach to Latin morphology (Embick 2010).

3.1   The puzzle

Latin has three tenses (past, present, future) and two aspects (perfect and imperfect).[13] In addition, there is a morpheme that has often been taken to indicate passive voice as in (11), and see Embick (2000) or Kiparsky (2005) for additional examples. However, this morpheme also denotes various kinds of anticausatives (12) and reflexives (13).[14] We will follow Alexiadou and Doron (2012) and Kallulli (2013) in using the umbrella term "nonactive voice" when referring to this suffix, glossed NACT.

(11)   *laud-a-ba-t-**ur***
        praise-Past-3SG-**NACT**

        'he/she was praised'

(12) a.   *vulnus   claudi-t-**ur***
            wound.NOM close-3SG-**NACT**

            'The wound heals'

      b.   *bellum   continua-t(-**ur**)*
            war.NOM   continue-3SG(-**NACT**)

            'The war is still on'

      c.   *ibi   īnsula in aquā commovē-t-**ur***
            there island in water move-3SG(-**NACT**)

            'An island moves about in the water'   (Varro, *De lingua latina 5.71*)

      d.   *omnia mūta-nt-**ur***
            all.PL   change-3PL-**NACT**

            'All (things) change'   (Ovid, *Metamorphoses 17.165*)

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[13]Verbs can also appear in the subjunctive mood, which we do not address for space limitations.
[14]Examples found via Miller (2010), who calls NACT the medio-passive.

(13) a. *vix   tene-o-**r**   quīn   dīc-a-m*
          scarcely hold-1SG-**NACT** that.not say-1SG-SBJ
          'I can hardly keep myself from talking'   (Plautus, *Casina* 239)

      b. *reliquās   armā-**r**-ī   et   sēsē subsequī   iussit*
          remainder arm-**NACT**-INF and REFL follow.INF order-PERF.3SG
          'The rest he ordered to armor up and follow him directly'

                                                              (Caesar, BG 4.32)

When a verb appears in nonactive voice, an external argument cannot be merged. The verb takes on a passive, reflexive, middle or anticausative meaning, depending on the context. Some roots are "inherently reflexive" (Miller 2010) and do not form reflexives with NACT. Others, the famous class of deponent roots, can only appear with NACT but have active meanings. We discuss this last class later.

At issue is the interaction of this morpheme with the perfect suffix. The passive and perfect can each appear on their own as in (14a–b), but cannot be combined (14c). Instead, an analytic form is used, made up of the passive participle and the copula (14d).

(14) a. *laud-a-t-**ur***
          $\sqrt{\text{LAUD}}$-TH-3SG-**NACT**
          'he/she is being praised'

      b. *laud-ā-**vi**-t*
          $\sqrt{\text{LAUD}}$-TH-**Perf**-3SG
          'he/she has praised'

      c. **laud-a-**vi**-t-**ur***
          $\sqrt{\text{LAUD}}$-TH-**Perf**-3SG-**NACT**
          (int. 'he/she has been praised')

      d. *laud-ā-**t**-us   est*
          $\sqrt{\text{LAUD}}$-TH-**PASSPTCP**-NOM is.Imperf
          'he/she has been praised'

(15)   The "synthetic-analytic alternation" in Latin nonactives for the verb *laudat* 'he praises'.

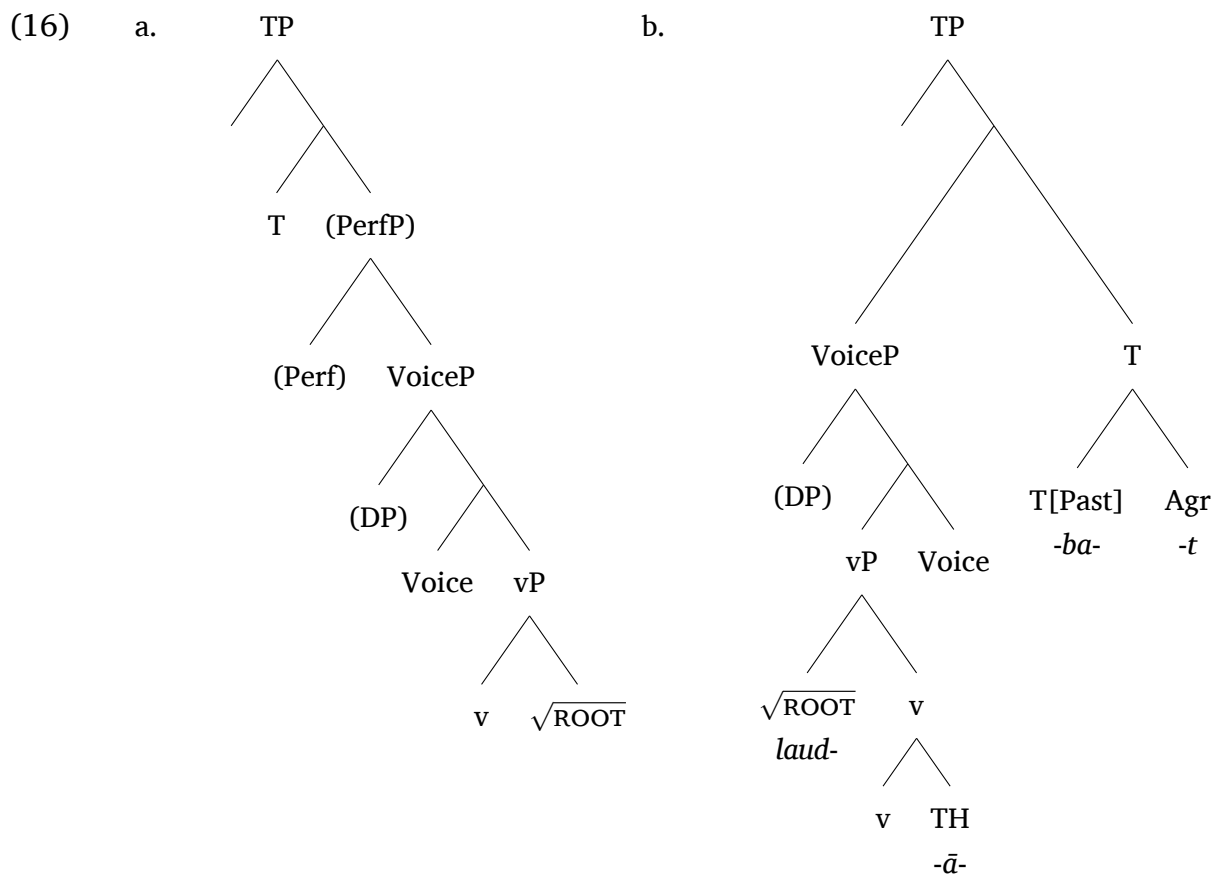|	Active	Synthetic nonactive	Analytic nonactive
Present imperfect	*laudat*	*laudātur*	*laudātus est*
Present perfect	*laudāvit*	——	*laudātus est/erat*

Some previous analyses have ignored the aspect of the auxiliary in the analytic constructions, e.g. Kiparsky (2005), who uses the present imperfect *sum* under the label "present perfect" due to the perfectivity of the participle. The result is a blurring of the lines between morphological perfectivity (as in perfect *erat* vs imperfect *est*) and semantic perfectivity owing to the usage of the perfect participle. We have found that possible variation can arise between (morphosyntactic) tenses with equivalent semantics; see Freese (1843:§218). When we speak of tense or aspect we will always

do so in a morphosyntactic, rather than semantic, sense.

Embick (2000) suggests a syntactic explanation of the gap in which a [pass] feature on Asp blocks adjunction of Asp to T. Working within a theory that derives surface order via head movement, the complex head $\sqrt{\text{ROOT}}$-TH-Asp is blocked from adjoining to T + Agr when [pass] is on Asp. Kiparsky (2005) proposes a lexicalist explanation in which there are too many features for a single cell in the paradigm (synthetic passive perfect), and as a result only the analytic form is available. We will build on the syntactic analysis, investigating the consequences of movement in hierarchical structure. We return to the lexicalist analysis in Section 5.

3.2   The syntax of the Latin paradigm gap

We assume the structure in (16a) for Latin, following Embick (2010). Theme vowels are generated here under v (Oltra Massuet 1999) but could just as well be adjoined to the root. In perfect constructions the perfect morpheme is merged and heads a PerfP. An Agr node and the theme vowel node TH are added in the morphological component. After linearization, this structure results in the surface order $\sqrt{\text{ROOT}}$–TH–(Perf)–T–Agr typical of Latin. We represent the structure head-initially for ease of exposition (16a) with the assumption that Latin linearizes to the right at PF (16b). Not much hinges on this point, and the structure could be represented head-finally as well. The tree in (16b) shows the result after linearization for the past tense verb *laudābat* 'he praised' (past imperfect).

(16) a.

```
              TP
             /  \
            /    \
           T    (PerfP)
                /    \
            (Perf)  VoiceP
                    /    \
                 (DP)     \
                      Voice  vP
                            /  \
                           v   √ROOT
```

b.

```
                    TP
                   /  \
                  /    \
               VoiceP    T
               /   \    /  \
            (DP)    \  T[Past] Agr
                  vP  Voice  -ba-   -t
                 /  \
              √ROOT  v
              laud-  / \
                    v   TH
                        -ā-
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What of nonactive voice? We propose that it is brought about in the syntax by merger of a special Middle Voice head which we annotate $Voice_{\emptyset}$, similar to $Voice_{\emptyset}$ in Schäfer (2008) and Kastner (2015), $Voice_{\{\}}$ in Wood (2015) and Middle Voice in Spathas et al. (to appear). This head prohibits the merger of a DP in its specifier. NACT is the overt spell-out of $Voice_{\emptyset}$:

(17) a.   Voice ↔ Ø

      b. $Voice_{\emptyset}$ ↔ NACT

As an additional assumption, we adopt the treatment of head movement as phrasal movement proposed in Matushansky (2006): a head moves to the specifier of its probe to satisfy a feature as in phrasal movement and then undergoes m-merger with its trigger, resulting in a complex head. It is relevant to note that m-merger is an operation defined over structure, occurring after movement and before linearization. Hence, m-merger between a head and its specifier may occur even in head-final languages, as already suggested for Amharic by Kramer (2014).

    Let us now characterize the morphophonological nature of NACT. First, its allomorph is chosen by the ϕ-features on Agr. For example, in the second person present NACT appears as *-ri-* before the person/number marker (18a–b), but in the third person

it appears as the suffix *-ur* (18c–d).

(18) a. *port-a-s*
$\sqrt{\text{PORT}}$-TH-2SG
'you carry'

b. *port-a-**ri**-s*
$\sqrt{\text{PORT}}$-TH-**NACT**-2SG
'you are being carried'

c. *port-a-t*
$\sqrt{\text{PORT}}$-TH-3SG
'he/she is carrying'

d. *port-a-t-**ur***
$\sqrt{\text{PORT}}$-TH-3SG-**NACT**
'he/she is being carried'

Table 3 lists the forms of NACT in the different ϕ-feature combinations, in the past and present tenses. Note how the exponent of T always appears before NACT + Agr. NACT appears at the right edge of the verb when Agr inflects for first and third person, but not when the subject is second person. We take this as evidence that Agr and NACT can undergo local dislocation (Embick and Noyer 2001; Embick 2007) after linearization and vocabulary insertion.[15]

		Active	Nonactive
1sg	Pres	amō	amo-**r**
	Past	amā-bam	amā-ba-**r**
1pl	Pres	amā-mus	amā-mu-**r**
	Past	amā-ba-mus	amā-ba-mu-**r**
2sg	Pres	amā-s	amā-**ri**-s
	Past	amā-bā-s	amā-bā-**ri**-s
2pl	Pres	amā-tis	amā-**mini**
	Past	amā-bā-tis	amā-bā-**mini**
3sg	Pres	amā-t	amaā-t-**ur**
	Past	amā-ba-t	amā-ba-t-**ur**
3pl	Pres	ama-nt	ama-nt-**ur**
	Past	amā-ba-nt	amā-ba-nt-**ur**

Table 3: Linear ordering of T, NACT and person/number morphemes.

For us, this means that NACT ends up being linearly adjacent to Agr. We propose that Voice raises to Spec,TP in syntax in order to satisfy some feature [F] on T (19a),

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[15]We assume that local dislocation can apply once to a pair of adjacent vocabulary items, if one is conditioned by the other. Put otherwise, a given exponent cannot local-dislocate its way across a number of other intervening exponents. This constraint lies at the heart of locality-based approaches such as Embick (2010).

at which point Voice undergoes m-merger with T and appears on its left (19b). Default Voice is silent and so m-merger of Voice and T is vacuous, but the result of this movement and m-merger is visible with overt Voice$_\emptyset$ (NACT).

(19)   a.
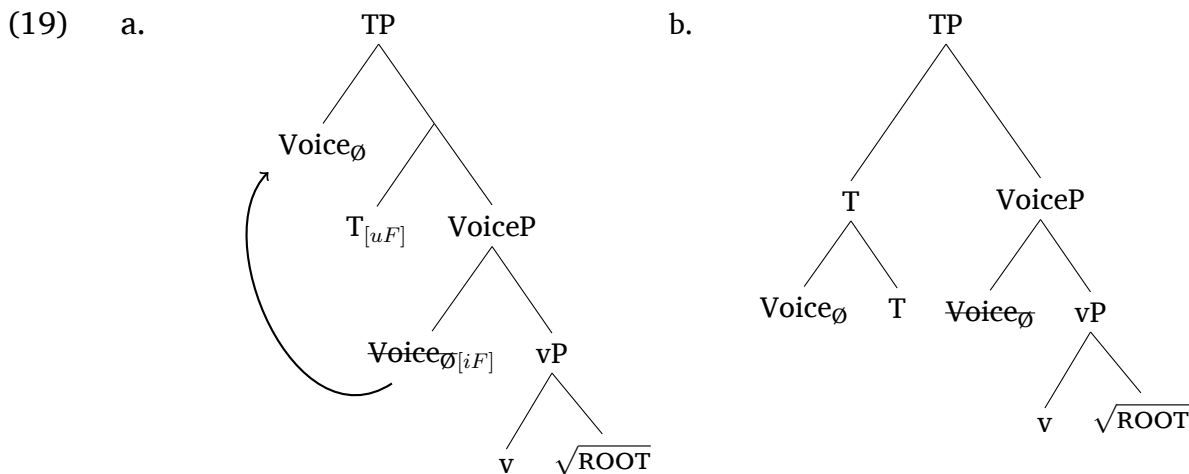
When an active perfective verb is derived, default Voice, Perf and T are in the structure. The feature [F] attracts Perf to Spec,TP, and Perf undergoes m-merger with T + Agr (20a), linearizing correctly to the left of T + Agr (20b): *laud-ā-ve-ra-t* $\sqrt{\text{LAUD}}$-TH-Perf-Past-3SG 'he had praised'.

(20)   a.
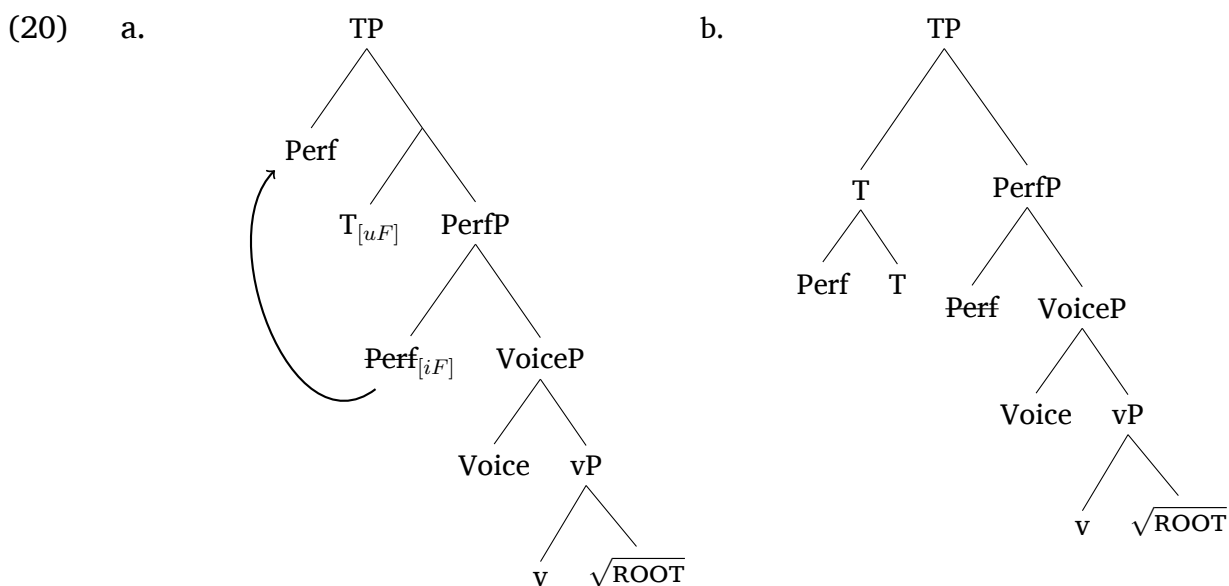
Compare this with the failed derivation of a nonactive perfective verb. In a sense, Perf intervenes between Voice$_\emptyset$ and T. Perf raises to Spec,TP and undergoes m-merger with T, appearing to its left. Since Voice$_\emptyset$/NACT must be local to T + Agr for allomorph selection, a derivation in which Voice$_\emptyset$-to-T movement does not occur is ineffable, leading to the gap in the paradigm. Agr cannot "see" NACT over an intervening overt Perf morpheme. But we know that Agr must be local to NACT: T + Agr must be local to NACT in order to correctly derive the 2PL endings in which nonactive and agreement

morphology fuse together to give the suffix *-mini*.

In other analyses of the gap, Embick (2000) and Haugen and Siddiqi (2013) have proposed that a [pass] feature on Asp prevents head movement of Asp to T. Kiparsky (2005) took this theory to task, arguing that the stipulation regarding [pass] is ad-hoc. Our re-conceptualization of the structural analysis does not solve the puzzle completely. It is still unclear why Perf (or Asp[Perf]) would block movement of NACT, i.e. what is the exact nature of the feature [F]; that must be left to future work at this point. The relevant observation is that the effect can be expressed in structural terms: it is not an arbitrary [pass] feature that blocks movement of Asp, but an overt Perf head that appears precisely between the position in which NACT is generated and the position it needs to get to. In line with the theory given here, we catalog next a number of correct predictions made by a locality-based theory of Latin verbs, before discussing the competition-based theory.

4   Locality Effects in Latin

Recall the surface order of affixes in an active clause in Latin: $\sqrt{\text{ROOT}}$-TH-(Perf)-T-Agr. We take contextual allomorphy to be sensitive to concatenated forms under linear adjacency (Bobaljik 2000; Embick 2010; Marantz 2013). This means that linearly adjacent morphemes can condition "special" (non-default) allomorphs on each other. When an overt morpheme intervenes between the conditioning morpheme and the conditioned morpheme, the default allomorph of the conditioned morpheme arises instead.

This section tests the allomorphy prediction: we describe four patterns that can be understood under a structural, locality-sensitive theory. Two have been noted previously and two are analyzed here for what we believe is the first time.

4.1   Perf conditions Agr, T bleeds the conditioning

Embick (2010:70) discusses a linear intervention effect in the perfect: If T is silent (as in the present), then an overt Perf head can condition special person/number endings. For example, when T is filled with an overt morpheme such as *ba/ra* (21) or *b/r* (22), the 1SG ending for a Class I root such as $\sqrt{\text{AM}}$ 'love' is consistent—*m* in the past and *o* in the future. When T is null, however, as in the present, a special ending arises, namely *-ī*, after the perfective morpheme *v* (23).

(21) a. *am-ā-ba-m*
       √LOVE-TH-Past-1SG
       'I loved'

   b. *am-ā-ve-ra-m*
       √LOVE-TH-Perf-Past-1SG
       'I loved'

(22) a. *am-ā-b-ō*
       √LOVE-TH-Fut-1SG
       'I will love'

   b. *am-ā-ve-r-o*
       √LOVE-TH-Perf-Fut-1SG
       'I will have loved'

(23) a. *am-ō̄*
       √LOVE-TH.1SG
       'I love'

   b. *am-ā-v-ī*
       √LOVE-TH-Perf-1SG
       'I have loved'

Similarly, the 2SG ending is usually *-s*, but in the present perfect it is *-istī*. The person/number ending of the present is conditioned by linearly adjacent Perf, whereas an overtly realized T bleeds the conditioning. With a null T in the present, Perf is linearly adjacent to Agr and can condition contextual allomorphy. When T is overt, as in the past or the future, the default endings appear. For additional details see Embick (2010:71) and the related discussion in Carstairs-McCarthy (2001) and Adger et al. (2003).

4.2   Root conditions Perf, theme bleeds the conditioning

Embick (2010:72) also notes that the perfect allomorph itself can be conditioned: the root can condition special allomorphy of overt Perf, but only when the two are linearly adjacent. For this to be the case, the theme vowel needs to be null.[16] This pattern is consistent with a locality-based approach if the root and Perf are linearly adjacent.

(24) Embick (2010:71–72):

   a.   Default *-v/vi-*:
        am-ā-vi-mus
        √LOVE-TH-Perf-1PL
        'we have loved'

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[16]This behavior is characteristic of consonant-final roots, but there are exceptions to the rule. Neither Embick (2010) nor we offer an account for how come the theme vowel "disappears" in these cases.

b.   Special *-si-*:
        scrip-si-mus
        $\sqrt{\text{WRITE}}$-Perf-1PL
        'we have written'

c.   Special *-i-*:
        vēn-i-mus
        $\sqrt{\text{COME}}$-Perf-1PL
        'we have come'

Importantly, this allomorphy is root-specific and does not depend on conjugation class. For example, different allomorphs of Perf appear in *men-u-ī* 'I have warned', *aug-s-ī* 'I have increased' and *strīd-i-ī* 'I have whistled', all roots of the second conjugation (Class II). The locality theory predicts that this specific kind of allomorphy should be possible.

4.3   Perf conditions T

The locality theory also predicts the possibility of Perf conditioning T when the two are adjacent. This is borne out: the past suffix is taken to be *-ba*, but it is *-era* when Perf appears (overtly).

(25) a.   Default *-ba*: *am-ā-**ba**-t* $\sqrt{\text{AM}}$-TH-Past-3SG 'he/she loved'.

      b.   Special *-era*: *am-ā-v-**era**-t* $\sqrt{\text{AM}}$-TH-Perf-Past-3SG 'he/she had loved'.

4.4   Theme conditions T, Perf bleeds the conditioning

Finally, Perf is predicted to intervene between T and TH as well. That this prediction is correct can be seen in the future perfect, but not the present perfect due to the lack of an overt T: it is well established that T is conditioned by TH (different conjugation classes have different endings). However, overt Perf bleeds the contextually conditioned endings, syncretizing the different classes in the perfect. As the grammars put it, the person endings in the perfect do not change from conjugation to conjugation.

(26) a.   Future imperfect, 1SG, *amā-**b-ō*** (class I, 'I will love'), *peta-**m*** (class III, 'I will seek).

      b.   Future perfect, 1SG: *amā-v-**ero*** (class I, 'I will have loved'), *petī-v-**ero*** (class III, 'I will have seeked').

To wrap up, we have given four examples of locality-obeying allomorphy in Latin, in line with the structural system described above. Two of these were discussed by Embick (2010) and two were introduced here. We now turn to a lexicalist view of the Latin phenomena.

5   Competition and Equivalence

Kiparsky (2005) views paradigm gaps as a result of competition between forms. For him, features such as [Pres] and [Pass] are functions taking the predicate or another function as their argument, such that Pres(Past(speak)) = *has spoken*, Past(Past(speak)) = *had spoken*, etc. The form generated by Pres(Past(Pass(speak))) is then unique in the Latin paradigm in that it contains three features.[17] This leads to a violation of an Economy condition: intuitively speaking, there are too many features for one cell in the paradigm. The impossible synthetic form is thus defeated by an analytic form which is equivalent to it in terms of Expressiveness.[18]

In this kind of lexicalist theory, paradigms emerge as a result of competition between forms. However, the nature of this competition is not specified: Kiparsky (2005) is careful to note that a combination of three features need not create a paradigm gap, only that a gap is likely to emerge where three features come together. The flipside, however, is that the system is unable to make predictions regarding where gaps actually emerge. It is thus unable to fully explain the Latin facts or the Hebrew facts, especially considering that the Hebrew gaps contain one feature fewer than the synthetic forms (lack of tense versus finite tense).[19]

A proponent of the competition-based theory might object at this point, arguing that our account of Hebrew also does nothing more than stipulate a Markedness violation for non-finite passive forms. So let us consider the blocking account more closely in light of the Hebrew patterns. According to Kiparsky (2010), the expression *John left* blocks the expression *John did leave* due to an Economy constraint, but *John left* does not block emphatic *John DID leave* because the latter carries added focus, and thus belongs in a different paradigm. Applying Kiparsky's logic to Hebrew, the differences between synthetic and analytic passives discussed in Section 2.3 mean that the two forms should be listed in separate paradigms. However, now the blocking account finds itself in a bind. If the two forms must be listed in separate paradigms, then there is no competition. Instead, there is a true paradigm gap for synthetic non-finite passives that cannot be filled in any way. Yet if it cannot be filled in any way, the notion of competition is irrelevant; the inevitable consequence is that the blocking account needs to allow for non-derivable expressions, since there are no synonymous expressions that can be used instead. In sum, we do not see how a competition-based

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[17]See Kiparsky (2005) for brief mentions of Marathi and Sanskrit as well.

[18]Bjorkman (2011, 2012) presents a similar analysis, in which an "overflow" pattern is argued to emerge as a result of limited head movement constrained by marked features.

[19]This is not to say that complexity measures are to be dispreferred in general. See e.g. Bobaljik (2012) for speculation that some complexity measure bans monomorphemic superlatives.

approach can deal with true paradigm gaps without conceding that different forms must be allowed to be generated independently of each other.

In addition, the lexicalist system described above is not equipped to deal with the morphophonological locality effects laid out in section 4 unless augmented with some kind of serial derivation mechanism. A locality-oriented structural theory predicts exactly the kind of conditioning environments that exist—and are on occasion bled— in the Latin verbal system. We conclude that the locality-based theory discussed here is superior for both Hebrew and Latin.

5.1   Latin idioms

If Latin were similar to Hebrew in terms of the phenomena discussed here, we should be able to show that the synthetic and analytic nonactive forms are different. However, the argument from disjoint reference cannot be made since nonactive voice encompasses anticausative and reflexive readings. In these cases coreference of internal and external argument does hold (in contrast to the Hebrew passive). The argument from idioms is pursued next for completeness, although it will not prove conclusive.

If the analytic and synthetic forms are equally Expressive, then a synthetic nonactive perfect and an analytic nonactive perfect must mean the same thing: either both are interpreted literally or both are interpreted idiomatically. Take a given idiom in the analytic nonactive perfect; we can ask whether the synthetic form retains the idiomatic reading of the analytic one. Caesar was famously reported to have said *iacta alea est* (27) upon crossing the Rubicon, meaning 'the die is cast/thrown', with the idiomatic reading 'we have passed the point of no return'. Does the idiomatic meaning exist in the imperfect (28)?[20]

(27)   *alea   iacta   est*
        bone   throw.PASSPTCP.NOM   is

        'the bone has been thrown', 'the die has been cast'

(28)   *alea   iaciē-bā-t-ur*
        bone   throw-Past-3SG-NACT

        'the die was (being) thrown'

We do not know for certain. Various complications surround this specific phrase, including that Caesar might have been translating from Greek and that the original quote might have been in the imperative. We have found one occurrence of the imperfect string *alea iaciē-bā-t-ur* in what seems like a literal sense, but the existence of the literal reading does not preclude the existence of an idiomatic reading.[21] Some of

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[20]cf. Embick (2000:189ff6) on stative readings of the perfect, including "the die is cast."

[21]Manuzio, Paolo: *Adagia Optimorum Utriusque Linguae Scriptorum Omnia, Quaecunque Ad Hanc Usque*

the classicist scholars we have consulted do think that the idiomatic reading should hold in the imperfect, but there is no consensus on this issue or clear evidence either way.[22]

5.2   A note on deponency

The lexicalist theory makes an additional argument against Embick (2000), arguing for a more principled derivation of deponent verbs. Deponent verbs are those verbs which have nonactive form but active meaning. The theory of stems and affixes in Kiparsky (2005:121–122,132) is set up as follows: nonactive marking is a conjugational feature [±Passive] that appears on verb stems as well as on inflectional endings. Only the affixes affect argument structure. Each of the two, stems and affixes, can be [+Passive], [-Passive] or unspecified.

(29)   [±Passive] verb stems in Kiparsky (2005):

    a.   Unspecified, in which case the verb may be active or passive.

    b.   [+Passive], which results in deponent stems.

    c.   [-Passive], which results in stems that Kiparsky calls *activa tantum*. These are verbs that never take NACT in the present, e.g. *perdō* 'destroy'.

(30)   Affixes are also specified for [±Passive]:

    a.   Person/number agreement is active and [-Passive]: *-t* '3SG.Pres'

    b.   NACT endings are [+Passive]: *-tur* '3SG.NACT'

    c.   All other endings (e.g. the present/active participle) are unspecified, and also nonfinite: *-ns* 'present participle'

Affixes (30b–c) can combine with a [+Passive] deponent stem without a clash: (30b) because it is [+Passive] itself and the non-finite affixes (30c) because they are unspecified.

There are two problems with this system. First, since [+Passive] suffixes are distinct from the [-Passive] suffixes, the similarity between e.g. *-t* '3SG' and *-tur* '3SG.NACT' is accidental. The latter is not decomposed into *-t* and *-ur*, missing a generalization.

The conjugational theory of deponents also undergenerates. The future passive participle ("gerundive", *-nd* form) exists for all three types of stems: regular, deponent and

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diem exierunt: cum plurimis ac locupletissimis indicibus. Ursellis: Ex Officina Cornelii Sutorii, impensis Lazari Zetzneri. Page 170. Retrieved September 2014 from http://www.uni-mannheim.de/mateo/camenaref/manuzio/manuzio1/jpg/s0170.html

[22]Another potential datapoint would be the expression *acta est fabula*, where the literal meaning is 'the play is done' and the idiomatic meaning can be taken to mean 'well that's the end of it', even when not necessarily talking about a play. Then we would ask whether the same idiomatic meaning would hold for the passive past imperfect *fabula agēbātur*. If there is a difference to be found between analytic and synthetic forms in Latin as well, this would constitute an additional argument against the lexicalist analysis.

"activa tantum", e.g. *amandus* 'to be loved' (regular), *hortandus* 'to be exhorted' (deponent), *perdendus* 'to be destroyed' ("activa tantum"). If the passive suffix is [+Passive] and the stem is [-Passive], then future passive participles should not exist for "activa tantum" stems, contrary to fact. Likewise, there are also "activa tantum" passive infinitives.

Transitioning from stems to roots, Embick (2000) proposes that deponent roots appear with a [pass] feature which behaves like the [pass] feature in ordinary nonactives morphologically but not syntactically (in other words, it does not block merger of an external argument). Haugen and Siddiqi (2013) suggest that [pass] originates on *v* and licenses certain roots in the sense of Harley and Noyer (2000). In our theory, this would mean that NACT is a special exponent of Voice licensed only by certain roots, although a full treatment of Latin deponency lies beyond the scope of this short paper.

In general, we cannot do justice to the literature on deponents and Latin participles here; our purpose was to point out problematic aspects in Kiparsky (2005) and indicate how the structural theory we are using can be used to model deponency as in Embick (2000) and Haugen and Siddiqi (2013). See Aronoff (1994) and Kallulli (2013) for additional discussion.

6   Conclusion

How are paradigm gaps filled? They are not. This paper has argued that in a given language, some structures cannot be built. Another structure can be co-opted to express a similar concept or idea, but the two—an impossible synthetic form and an existing analytic form—are not directly related. The analytic form can be generated independently of the gap, and will be interpreted regardless of what the synthetic form would have expressed; the analytic form does not "block" the synthetic one, and in fact there is no "blocking" at the word or multi-word level. In support of this view, we have presented the passive paradigm in Hebrew where it is clear that the synthetic and analytic forms are not equivalent: the analytic form can have idiomatic readings that do not exist for the synthetic form, and the analytic form allows coreference of external and internal argument while the synthetic form forces disjoint reference.

The alternative approach to ours is a competition-based one: for any given concept that the speaker wishes to express, she generates two (or more) equivalently Expressive forms and compares them in terms of metrics such as markedness and economy. The Hebrew data refute this claim.

What our data do not refute is the notion of a paradigm writ large. Appeals to the paradigm as an object in the grammar have been made based on morphophonological

syncretism and economy. See e.g. Albright (2011) for an overview, and the papers in Bachrach and Nevins (2008) for critical discussion. Yet if one were to argue for the status of the paradigm, paradigm gaps can no longer serve as an argument. The opposite is the case: our investigation of paradigm gaps has revealed them to be the result of standard structure building, without the need for further mechanisms.

Parallel to the general claim on paradigm gaps, we have also highlighted some empirical benefits of a syntactic approach to word-building. In Latin, we have provided a renewed analysis of the paradigm gap in the nonactive perfect and identified a number of locality effects that receive a natural explanation under a cyclic, locality-centered approach to morphology. The competition-based view cannot predict these allomorphic interactions without being augmented with hierarchical word-internal structure. To round out the Latin picture, we sketched how deponency fits into our theory.

To conclude, there are true paradigm gaps in Hebrew (and possibly in Latin as well): forms that simply cannot be expressed and for whom a paraphrase does not do the same syntactic and semantic work. Paradigm gaps remain as a descriptive notion, yet the paradigm is not a morphosyntactic primitive in and of itself. Regular structure-building is to be preferred to competition and blocking as an explanation for these phenomena.

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