

Blocking and Paradigm Gaps*

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August 2017

Abstract

Gaps in morphological paradigms are often explained in terms of blocking: generating one form is blocked by the existence of a paraphrase. Another way of thinking about paradigm gaps dissociates their existence from competition between forms. Unlike in competition-based approaches, systematic gaps can be seen as true gaps; the system might not generate a certain form, but this form is not considered in comparison to others. Adopting this latter approach, we argue that inflectional paradigms are neither morphosyntactic primitives nor the result of competition. This claim is supported by data from two unrelated languages. For Hebrew, we demonstrate that a passive gap is not the result of competition with analytic paraphrases. For Latin, we show that a cyclic, syntax-based approach is superior to a theory that generates nonactive verbs in the lexicon and has them compete against each other. Systematic paradigm gaps are thus argued to result from syntactic structure building, without competition regulating independent morphological constructions.

Keywords: competition; Hebrew; Latin; paradigm gaps; passive; voice

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 systematic 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? Is the morphology regulated by competition between forms?

The current paper suggests that answers to these questions can be found in the syntax. The following answers will be motivated: certain forms cannot be generated because of independent syntactic constraints; 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 blocking relationship between the unavailable form and its paraphrase. We identify two cases in which the synthetic form is verbal and the analytic (periphrastic) one is adjectival. The two constructions are distinct.

We propose that these kinds of gaps can be handled in the syntax and do not need to be given a blocking account in the lexicon. Since a blocking account is not necessary to account for such cases, it is unclear whether it is needed in general. Our contribution lays out how this claim can be tested, based on data in Hebrew and Latin.

We first explain the difference between different kinds of gaps and how they can be accounted for (Section 2). The first empirical puzzle, that of Hebrew, is discussed in Section 3. The Latin case against blocking is the subject of Section 4, followed by our own analysis in Section 5. Section 6 concludes.

*Thanks to Bronwyn Bjorkman, Dave Embick, Richie Kayne, Alec Marantz and Neil Myler for comments on previous versions of this article, and to Stephanie Harves, Tal Linzen, Roumi Pancheva, Jim Wood, the NYU Morphology Research Group and the audience at WCCFL 32 for discussion (in particular Rajesh Bhatt, Sabine Iatridou and Alfredo García Pardo). For discussion of the intricacies of the Latin perfect participle we are grateful to Larissa Bonfante, David Levene, Matthew Santirocco, William Short and Rex Wallace. None of the classicists, philologists and/or theoreticians mentioned here are responsible for any shortcomings that might be found in the paper. This research was supported in part by DFG award AL 554/8-1 to Artemis Alexiadou (I.K.).

2 Paradigm gaps

To start off, we must be precise about what we mean when we talk about gaps. Discussion in the literature has touched on a range of interconnected topics, including gaps, ineffable items and periphrasis. Some of the most famous cases have to do with gaps limited to certain lexical items. In this section we will briefly review such cases (Section 2.1) before shifting the discussion to *systematic gaps* in Section 2.2. We then outline the two approaches to the synthetic/analytic distinction in paradigm gaps in Section 2.3.

2.1 Lexical gaps

A *lexical gap*, *individual gap* or *ineffable form* is usually taken to be a derived form that should exist but does not. For example, Halle (1973) discusses derivational failures like English **arrivation* and inflectional failures like Russian **erunzu* (int. ‘I behave foolishly’). Morphologists have been attempting to give explicit analyses of this phenomenon at least since Halle’s work, and in so doing have identified a range of factors which affect whether or not a given word can be formed. These range from lexical diacritics (Halle 1973; Frampton 2001), through various phonological considerations regarding the input or the output (Rice 2005; Bailyn and Nevins 2008; Baerman et al. 2010; Löwenadler 2010; Nevins 2015; Pertsova 2016), to blocking by other forms (Aronoff 1976; Bresnan 2001; Embick and Marantz 2008).¹

For example, Embick and Marantz (2008) reduce what is often seen as blocking between words (\checkmark *glory* ~ \times *gloriosity*) to competition among individual morphemes at Vocabulary Insertion, rather than larger structures. This kind of work is part of a smaller literature which makes a useful distinction between gaps that are caused by idiosyncratic rules, those that arise from phonological operations and those that are ungrammatical for structural reasons (Trommer 2001; Fanselow and Féry 2002; Embick and Marantz 2008). Other kinds of approaches have attempted to establish quantitative link between the likelihood of a gap emerging and the productivity of a phonological rule within a speaker (Albright 2003) or speakers (Yang 2016; Gorman and Yang To appear).

What these cases all have in common is that the gaps are limited to sets of lexical items. To illustrate, take comparative forms in English. As is well known, not any adjective can receive a synthetic comparative form:

- (1) a. *big* ~ \checkmark *bigger*
 b. *intelligent* ~ \times *intelligenter* [phonological gap]
 c. *perfect* ~ \times *perfecter* [semantic gap]

In brief, the problem with (1b) is phonological: the comparative does not attach to quadrisyllabic bases. A more elaborate generalization can be extracted, but it is stated over the phonology of individual lexical items (see Gouskova and Ahn 2016 for a recent account and additional references). Likewise, the problem with (1c) is semantic in nature: *perfect* is a binary adjective and one thing cannot be perfect-er than another along a scale of perfectness (*perfect* is a “maximum standard” adjective in the terminology of Kennedy 2007).

The restriction on forming comparatives can be stated over individual lexical items, based on phonological or semantic features. But this is not a ban against all comparatives; it is a ban against forming the comparative from a set of lexical items. This set might form a natural class in its phonological or semantic characteristics, but it is nonetheless one order of magnitude away from a ban on the set of all adjectives.

The question then arises whether *more intelligent* means exactly what **intelligenter* was supposed to mean. This much is not clear: while Embick (2007) analyzes the analytic and synthetic comparatives as having the same underlying structure, Higgins (1977) and Matushansky (2013) have provided some arguments indicating that the two might mean different things (see also Dunbar and Wellwood 2016 and references therein). This question—which we will not resolve for comparatives—lies at the heart of our investigation of systematic gaps.

2.2 Systematic gaps

What we would like to highlight in the current contribution is the existence of what we call *systematic gaps*: syntactic configurations whose existence is not possible, regardless of the lexical items which were meant to take part in the derivation. Just as individual gaps can teach us what phonological and semantic features the mechanisms

¹We thank the reviewers for filling some of the gaps in our acknowledgment of the relevant literature.

of competition might be sensitive to, so can systematic gaps teach us how the architecture of the mechanism itself is set up.

As a case in point we take passive verbs in Modern Hebrew, to be discussed in finer detail in Section 3. The passive infinitive does not exist in the verbal templates $Xu\check{Y}aZ$ and $huXYaZ$, but at first blush it looks as though 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).

(2) The “synthetic-analytic alternation” in Hebrew passives for the verb *serek* ‘he combed’:

	Active	Synthetic passive	Analytic passive
Past	<i>serek</i>	<i>sorak</i>	<i>haja mesorak</i>
Infinitive	<i>lesarek</i>	—	<i>lihiot mesorak</i>

This pattern transcends the phonological or other characteristics of the verb: no root can be instantiated in the empty slot in (2), hence a systematic gap. The question we pose is what these gaps can tell us about the architecture of the grammar. In particular, we are interested in probing the relationship between the gap and the analytic form which might be seen as its paraphrase.

Various works have presented various viewpoints on analytic or “periphrastic” constructions similar to those in (2). For [Spencer \(2003\)](#), periphrasis is in essence idiomatic, in that the perfective meaning of *has written* is assumed not to derive from composing the two elements; rather, the combination is listed as periphrasis (the empirical core of his paper comprises complex auxiliary constructions in Bulgarian). [Bonami \(2015\)](#) provides a different view, in which periphrasis relies on “reverse selection”. Similar questions arise even when considering possible affix combinations, as in [Wunderlich’s \(2001\)](#) analysis of affixation in Yimas within Minimalist Morphology (though see [Harbour 2003](#) for a critique).

More directly relevant to (2) are cases in which the analytic periphrasis arguably fills in a gap, standing in contrast to a synthetic form. Only a few such cases have been discussed with the explicit aim of identifying the connection between analytic and synthetic forms. [Sadler and Spencer \(2001\)](#) provide a morphomic account of Latin which assumes that synthetic and analytic forms are equivalent. [Kiparsky \(2005\)](#) critiques certain aspects of their proposal, but his own account makes a similar assumption. We will target this assumption for Latin after discussing the Hebrew data. Our conclusion—that the synthetic and analytic form are not part of the same paradigm—will serve as an argument that the two forms also do not compete with each other (an option dismissed by [Sadler and Spencer 2001](#)).²

2.3 Competing approaches to competition

The guiding question is where does competition hold. In analyzing systematic gaps in Hebrew and Latin, we adopt Distributed Morphology ([Halle and Marantz 1993](#)), where words are formed by concatenation of morphemes in the syntax. This view will be contrasted with approaches that take competition to regulate the lexicon. Under that view, paradigm gaps are a result of blocking between competing expressions. We use the term “paradigm” in a descriptive sense throughout the paper, since none of the approaches discussed here subscribes to paradigms as independent morphosyntactic entities.

2.3.1 Syntax-based non-competition

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 $\sqrt{\text{STEAL}}$. Any competition between the two is an illusion. This view will be extended here to account for systematic gaps.

Under the view in [Embick and Marantz \(2008\)](#) 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 readily 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 reason that a form like *breaker*

²We are aware of two other cases similar to the current data: [Stump \(2001:230\)](#) discusses an analytic future verbal form in Sanskrit which is claimed to block a synthetic one. And [Kalvana and Lokmane \(2010\)](#) report paradigms in Latvian that appear similar to ours. Strikingly, the key Latvian data concern non-active verbal forms, just as in Hebrew and Latin.

would sound odd, even though *breaker* is not blocked by a competing, listed form. Nevertheless, *stealer* as a productive form does exist, despite the fact that a competition-based view predicts *stealer* to be blocked by *thief* across the board.

If syntax does indeed go “all the way down”, the same account should be applicable to systematic gaps. The claim is fairly straightforward: in systematic gaps, analytic forms do not block synthetic forms. Rather, synthetic forms are un-derivable in their own right. Crucially, this view predicts that the two constructions are truly different; they are members of different derivational strategies, or paradigms, so to speak. It is this position that will be defended in our discussion of Hebrew and Latin.

2.3.2 Global competition with blocking

The alternative view is one in which synthetic and analytic forms are part of the same paradigm, and has been assumed implicitly or explicitly in a variety of frameworks (Embick 2000; Stump 2001; Lieb 2005; Bonami 2015). What would a competition-based view amount to? We first consider a Blocking approach (Sadler and Spencer 2001), specifically the one proposed by Kiparsky (2005, 2010) within Optimality Theory (Prince and Smolensky 1993/2004). We then augment the discussion with the Neutralization approach of Legendre (2009) and Müller (2013).

Kiparsky (2005, 2010) views paradigm gaps as a result of competition between forms in terms of two contrasting constraints, MARKEDNESS and EXPRESSIVENESS. The former favors expressions with fewer morphemes (lexical *worse* blocks derived **badd-er*). The latter is a faithfulness constraint requiring that all meaning in the input is represented in the output.

(3) Constraints used by Kiparsky (2005, 2010):

a. **MARKEDNESS** (Kiparsky 2010)

Avoid complexity.

In Kiparsky (2005), this constraint was called ECONOMY and banned the occurrence of too many features in a single word. In Kiparsky (2010:318) it was defined as “minimize the number of words” in a discussion of reduplication.

b. **EXPRESSIVENESS** (Kiparsky 2005)

Express the meaning of the input (FAITHFULNESS in Kiparsky 2010).

It is instructive to discuss the predictions made by such a theory with regards to impossible forms. On this account, the reason English does not have **badder* is that this form is harmonically bounded by *worse* and always loses out to it. *Worse* similarly blocks *#bad* for comparatives.

We will focus on multi-word expressions. What about **left John* versus *✓John left*? There are now two possible readings of Kiparsky (2005). On one, the non-existence of **left John* has nothing to do with the availability of *✓John left*. On the other, *✓John left* blocks **left John*. But if no blocking is involved, the entire notion of competition would be rendered vacuous: either both forms compete to realize the intended meaning, or they are entirely separate and no notion of competition can be set up. That is to say, for the Blocking theory to be falsifiable, it must commit to the view that any ungrammatical form is blocked by a competing, grammatical form. This is the core principle of a competition-based mechanism such as the one that lies at the heart of OT, forcing the second reading of Kiparsky (2005). The winning candidate is *✓John left*, necessarily blocking all others.

We formalize this idea in (4), where MARKEDNESS constrains too many phonological words from expressing the same idea.

(4) *John left*:

John ₁ PAST ₂ leave ₃	MARKEDNESS	EXPRESSIVENESS
a. John ₁ did ₂ leave ₃	*!	
b. John ₁ left _{2,3}		

One more point regarding the Blocking account is that it might make recourse to different MARKEDNESS or EXPRESSIVENESS constraints. Formalizing Kiparsky’s analysis of focus in English, the phrase *✓John left* does not block emphatic *✓John DID leave* because the latter carries added focus. Kiparsky (2010:319) suggests that blocking does not hold outside of paradigms, where different expressions are not synonymous. Kiparsky (2005:114) similarly takes competition to hold with respect to features expressed “by morphological means”.

We assume that pronounced focus counts as an extra violation of MARKEDNESS. As it stands, the analysis results in a ranking paradox in which the wrong candidate is chosen, (5c) instead of (5a).

(5) *John did_{FOCUS} leave:*

	John FOCUS PAST leave	MARKEDNESS	EXPRESSIVENESS
desired [☞]	a. John <i>did</i> _{FOCUS} leave	*!*	
	b. John did leave	*!	*
actual [☞]	c. John left		**

This problem can be solved by assuming that different constraints are possible for different constructions. Adding a highly-ranked EXPRESSIVENESS(FOCUS) ≫ MARKEDNESS will rule out (5b–c), leaving (5a) as the winner. This is how the Blocking approach attempts to find the most optimal expression of the input, choosing among candidates of different sizes.

2.3.3 Global competition with neutralization

The point that different candidates might have different interpretations is taken head-on in the Neutralization approach to competition (Legendre et al. 1998; Legendre 2009; Müller 2011, 2013), a term we take directly from Legendre (2009). This line of work embraces the premise that not all candidates in a syntactic OT tableau have the same meaning, suggesting in essence that the candidate with the closest meaning to the input is chosen (if the faithful candidate is less harmonic).

Simplifying considerably, take the case of multiple *wh*-questions (Legendre 2009). When two question operators Op exist in the syntax and semantics, they ordinarily attract two distinct *wh*-phrases. Markedness and faithfulness constraints generate the combinatorial typology in which Bulgarian fronts both *wh*-phrases, (6a), English leaves one of them in situ, (6b), and Chinese leaves both in situ, (6c).

(6) Input: [Op₁ Op₂ [DP[wh]₁ ... V ... DP[wh]₂]]

- | | | |
|----|--|-----------|
| a. | <i>koj₁ kakvo₂ na kogo e da?</i> | Bulgarian |
| | who what to whom has given | |
| | ‘Who gave what to whom?’ | |
| b. | Who ₁ bought what ₂ ? | English |
| c. | <i>lisi geile shei₁ shenme₂?</i> | Mandarin |
| | Lisi gave who what | |
| | ‘What did Lisi give to whom?’ | |

To make the point for Neutralization, Legendre (2009) next introduces data from Italian, a language in which at least some speakers cannot construct multiple *wh*-questions at all. Informally, the analysis here is that while the input contains two question operators, the most harmonic candidate contains only one. That is to say, even though there are two questions in the input, the closest that speakers can get to this construction is to ask a “regular” question with only one *wh*-phrase. The remaining part of the input is *neutralized*. In this way, the difference in meanings between candidates is accepted as a necessary evil of sorts.

Importing the argument to paradigm gaps, one would say that an analytic form does compete with a synthetic form, just as any two given forms compete in OT regardless of semantic or formal overlap (under classic Richness of the Base, every possible candidate is in principle generated by GEN for every given tableau). This approach is more similar to ours, although we will argue that ranking candidates by semantic similarity to the input suffers from a large degree of arbitrariness.

2.4 Summary and outlook

The three approaches to systematic gaps are summarized in Table 1. We will show that synthetic and analytic forms have different meanings, hence they should not be seen as part of the same paradigm. Given this conclusion, it is unclear whether competition between forms is necessary at all (unlike in the Blocking account). We will similarly argue that the Neutralization view is not able to provide a principled account of which candidate is chosen in its own brand of competition. Finally, we will ask what other benefits there are to treating these phenomena the way we propose.

	Shared paradigm	Derivation	Choice of winner
Syntactic (DM)	No	Serial	None
Blocking	Yes	Global	Blocking
Neutralization	No	Global	Neutralization

Table 1: Approaches to systematic gaps.

Our two empirical domains are the passive in Hebrew and non-active verbs in Latin. In each case, we apply three diagnostics in order to test whether the synthetic and analytic forms are part of the same “paradigm”: shared derivational source, difference in meaning with idioms, and subject coreference effect. We will see that competition across multi-word expressions does not need to be built into the grammar, providing support for a syntactic approach to morphology.

3 The Hebrew passive

In this section we show that the synthetic-analytic alternation in Hebrew boils down to the difference between a verbal passive and an adjectival passive. This claim will be based on the three diagnostics mentioned above: whether the two forms share the same source, whether they license idioms the same way, and whether they exhibit subject coreference effects.

Since the two forms are demonstrably different, it will not do to analyze the alternation as a case of blocking. Instead, the verbal passive is simply underivable in certain configurations. This case study makes explicit the kinds of predictions made by a theory espousing competition between whole words and a theory that does not. We flesh out the differences between the two forms in Section 3.1, provide our analysis in Section 3.2 and draw conclusions about competition in Section 3.3.

3.1 Verbal passives and adjectival passives

The distinction between verbal passives and adjectival passives is well-known in the literature, although accounts differ on where the line should be drawn (Wasow 1977; Levin and Rappaport 1986; Borer and Wexler 1987; Embick 2004; Bruening 2014). However diagnosed and analyzed, verbal passives are taken to be part of the verbal system and adjectival passives to pattern distributionally with adjectives. We return to the exact analysis in Sect. 3.2; for now, what matters is that in Hebrew, passive verbs can be **distinguished structurally** from adjectival passives. Embick (2004) demonstrated that if the door is *closed*, it could have been built closed (adjectival passive, stative) or been closed from an open state (verbal passive, eventive). The same logic holds for a verb like *cover* in Hebrew. The implied present tense in (7a) is ambiguous between a verbal (progressive) reading and an adjectival (stative) reading. However, in Hebrew the future copula diagnoses an adjectival passive form (Doron 2000). Accordingly, the future tense in (7b) is unambiguously adjectival (Doron 2000; Horvath and Siloni 2008; Meltzer-Asscher 2011).³

- (7) a. *ha-sir mexuse* (synthetic)
 the-pot cover.INTNS.PASS.Pres
 ‘Someone is covering the pot.’ (verbal)
 ‘The pot is covered.’ (adjectival)
- b. *ha-sir jihie mexuse* (analytic)
 the-pot will.be cover.INTNS.PASS.Pres
 ‘The pot will be covered.’ (adjectival only)

Another pair of examples comes from work by Doron (2000):

³Abbreviations used: ACC accusative, CAUS “causative” template, CS Construct State, F feminine, FIN finite, IMP imperative, Imperf imperfect, INF infinitive, INTNS “intensive” template, MID “middle” template, NACT nonactive, NOM nominative, PASS passive, PASSPTCP passive/perfect participle, Perf perfect, Pres present, PL plural, REFL reflexive, SBJ subjunctive, SG singular, TH theme vowel. Hebrew transcriptions are given in IPA, with “e” standing in for /e/ and “r” standing in for /r/. Present forms utilize the present participle, which can be used as a present-tense verb, a nominal or an adjective (Boneh 2013; Doron 2013).

- (8) a. *ha-kontsert muklat* (synthetic)
 the-concert record.CAUS.PASS.Pres
 ‘Someone is recording the concert.’ (verbal)
 ‘The concert is on tape.’ (adjectival)
- b. *ha-kontsert jihie muklat* (analytic)
 the-concert will.be record.CAUS.PASS.Pres
 ‘The concert will be on tape.’ (adjectival only)

In infinitival and imperative constructions, the passive form is comprised of a copula and the present participle. As is to be expected from an analytic, stative adjective, it does not entail that an event took place, only that the state holds (Doron 2000; Kratzer 2000; Embick 2004):

- (9) a. *ratsiti lihiot mesorak* (analytic)
 I.wanted to.be comb.INTNS.PASS.Pres
 ‘I wanted to be combed’ (adjectival only)
- b. *(ti)hie mesorak!* (analytic)
 be.IMP/FUT comb.INTNS.PASS.Pres
 ‘Be combed!’ (#‘Undergo a combing event!’)

Horvath and Siloni (2008) and Meltzer-Asscher (2011) provide similar arguments for the difference between adjectival and verbal passives in the language.

Next, whereas the analytic forms may have an **idiomatic reading** (10a), synthetic passives (10b) are always compositional.

- (10) a. *ze jihie muvan me-elav* (analytic)
 this will.be understand.CAUS.PASS.Pres from-to.him
 ‘It will be self-evident.’ (idiomatic)
- b. *#ze juvan me-elav* (synthetic)
 this understand.CAUS.PASS.Fut from-to.him
 (no immediate clear meaning)

Idiomatic readings of analytic passives arise in infinitives as well, which will be relevant for the following discussion.

- (11) *ha-balfanit garma la-hesber [lihiot muvan me-elav]*
 the-linguist caused to.the-explanation to.be understand.CAUS.PASS.Pres from-to.him
 ‘The linguist made the explanation be self-evident.’

This observation was already made by Horvath and Siloni (2008, 2009), who discuss additional cases of semantic drift.

Lastly, 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 (12a), with the participle, allows **coreference** whereas the synthetic form (12b) does not (Sichel 2009:720):

- (12) a. *ha-jalda hajta mesorek-et* (analytic)
 the-girl was comb.INTNS.PASS.Pres-F
 ‘The girl was combed.’ (agent = / ≠ theme)
- b. *ha-jalda sork-a* (synthetic)
 the-girl comb.INTNS.PASS.Past-F
 ‘The girl got combed.’ (agent ≠ theme)

In infinitives the analytic passive form exhibits the same ambiguity as (12a).

- (13) a. *ha-sapar garam la-jalda [lihiot mesorek-et]*
 the-stylist caused to.the-girl to.be comb.INTNS.PASS.Pres-F
 ‘The hair stylist caused the girl to be combed.’ (agent ≠ theme)
- b. *ha-jalda garma le-atma [lihiot mesorek-et]*
 the-girl caused to-herself to.be comb.INTNS.PASS.Pres-F
 ‘The girl caused herself to be combed.’ (agent = theme)

The three diagnostics indicate that the synthetic and analytic forms are not equivalent, as summarized in Table 2. This result is not surprising from our perspective, since the two forms are generated independently of one another: one is a verbal passive and one is an adjectival passive.

	Synthetic (verbal)	Analytic (adjectival)
Eventive or stative?	Eventive/stative	Stative
Idiomatic?	Compositional	Idioms possible
Disjoint reference?	Only disjoint	Co-reference possible

Table 2: The synthetic-analytic distinction of Hebrew passives parallels the verbal-adjectival distinction.

Importantly, there is no sense in which one of the two forms consistently blocks the other: the synthetic passive is a passive verbal form while the analytic passive is an adjective. We motivate this distinction further in what follows, but first some background on the verbal system of Hebrew is in order.

3.2 Systematic gaps are base-generated

3.2.1 Hebrew verbal morphology

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 instantiation 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. The generative literature on Hebrew in particular and Central Semitic in general spans many kinds of analyses (McCarthy 1981; McCarthy and Prince 1990; Aronoff 1994; Bat-El 1994, 2002, 2008; Ussishkin 2005; Borer 2013; Laks 2014:inter many alia). We implement a syntax-based analysis following the lead of Doron (2003), Arad (2005) and Kastner (2016, To appear), in which roots combine with functional heads in the syntax. We use the \sqrt{XYZ} notation for triconsonantal roots and \sqrt{Y} for historic geminates.

Table 3 exemplifies the instantiation of roots in templates with the root \sqrt{pkd} , denoting the general semantic field of “counting”, in all seven templates. Roots are only rarely instantiated in more than a few templates; even though \sqrt{pkd} is convenient to use in this regard, the passive intensive forms meaning ‘be commanded’ (line 4) are archaic. These forms are exemplified with \sqrt{gdI} instead.

	Template	Mnemonic	Gloss	Past	Present	Future
1	$XaYaZ$	simple	‘order’	<i>pakad</i>	<i>poked</i>	<i>jifkod</i>
2	$niXYaZ$	middle	‘be absent’	<i>nifkad</i>	<i>nifkad</i>	<i>jipaked</i>
3	$Xi\check{Y}eZ$	intensive	‘command’	<i>piked</i>	<i>mefaked</i>	<i>jefaked</i>
4	$Xu\check{Y}aZ$	intensive passive	‘be raised’	<i>gudal</i>	<i>megudal</i>	<i>jegudal</i>
5	$heXYiZ$	causative	‘deposit’	<i>hefkid</i>	<i>mafki</i>	<i>jafki</i>
6	$huXYaZ$	causative passive	‘be deposited’	<i>hufkad</i>	<i>mufkad</i>	<i>jufkad</i>
7	$hitXa\check{Y}eZ$	intensive middle	‘ally himself’	<i>hitpaked</i>	<i>mitpaked</i>	<i>jitpaked</i>

Table 3: Finite forms in the Hebrew verbal system.

The puzzle discussed so far centers on the two passive templates $Xu\check{Y}aZ$ and $huXYaZ$. The shaded cells in Table 4 show the systematic gap—there are no passive infinitives or passive imperatives.⁴ 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).⁵

In addition, there is only one verbal noun (roughly similar to “action nominalizations” or the *masdar* in various languages). This nominalization is ambiguous between active and passive readings, as with *hafmada* ‘destruction’:

⁴An 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.

⁵An anonymous reviewer asks why the middle template $niXYaZ$ does not show these gaps, even though passive readings can be obtained in it. Doron (2003), Arad (2005) Reinhart and Siloni (2005), Laks (2011) and Kastner (2016) provide various ways of answering this question, all centering around the question of how an anticausative form can also serve to existentially close over an implicit external argument. For present purposes, it is enough to assume that $niXYaZ$ is not derived using the syntactic head Pass motivated below, an assumption which correctly predicts that not every active verb in $XaYaZ$ has a corresponding passive verb in $niXYaZ$. The latter form can be derived using a non-active head such as Voice_∅ from Kastner (To appear).

	Template	Mnemonic	Gloss	Infinitive	Imperative	Verbal noun
1	<i>XaYaZ</i>	simple	‘order’	<i>lifkod</i>	<i>pkod</i>	<i>pkida</i>
2	<i>niXYaZ</i>	middle	‘be absent’	<i>lehipaked</i>	<i>hipaked</i>	<i>hipakdut</i>
3	<i>XiYeZ</i>	intensive	‘command’	<i>lefaked</i>	<i>paked</i>	<i>pikud</i>
4	<i>XuYaZ</i>	intensive passive	‘be commanded’	—	—	
5	<i>heXYiZ</i>	causative	‘deposit’	<i>lehafkid</i>	<i>hafked</i>	<i>hafkada</i>
6	<i>huXYaZ</i>	causative passive	‘be deposited’	—	—	
7	<i>hitXaYeZ</i>	intensive middle	‘ally himself’	<i>lehitpaked</i>	<i>hitpaked</i>	<i>hitpakdut</i>

Table 4: Non-finite forms in the Hebrew verbal system.

- (14) a. *hafmada-t ha-oiev et ha-ir*
destruction-CS the-enemy ACC the-city
‘the enemy’s destruction of the city’
- b. *hafmada-t ha-ir al-jedej ha-oiev*
destruction-CS the-city by the-enemy
‘the city’s destruction by the enemy’

In this regard the nominalization pattern is identical to that in English, which is ambiguous as well (and will not be treated in the current paper):

- (15) a. The enemy’s **destruction** of the city.
b. The city’s **destruction** by the enemy.

We assume verbal nouns like *hafmada-t* and *destruction* to be semantically ambiguous, lacking a passive form morphologically.

3.2.2 Verbal passives are synthetic

It is generally accepted that verbal passives in Hebrew are derived from an active counterpart via some operation of passivization in the syntax, be the framework syntactic (Doron 2003; Alexiadou and Doron 2012; Borer 2013) or lexicalist (Reinhart and Siloni 2005; Ussishkin 2005; Laks 2011). The meaning of a verb in the passive is compositional and transparent in a way that non-passive templates are not. For example, verbs in the “passive intensive” *XuYaZ* are the passivized version of an active verb in “intensive” *XiYeZ*, (16a), and verbs in “passive causative” *huXYaZ* are the passivized version of an active verb in “causative” *heXYiZ*, (16b).

- (16) Predictable alternations in the passive templates:

	Active	Passive
a. <i>XiYeZ</i> ~ <i>XuYaZ</i>	<i>bifel</i> ‘cooked’	<i>bufal</i> ‘was cooked’
b. <i>heXYiZ</i> ~ <i>huXYaZ</i>	<i>hefmid</i> ‘destroyed’	<i>hufmad</i> ‘was destroyed’

This derivational analysis accounts for two important facts about passives in Hebrew: first, that there do not exist any passive verbs (that is, verbs in *XuYaZ* and *huXYaZ*) without an active base from which they are derived; and second, that passive verbs cannot mean anything other than passivization of the active form, where “passivization” means suppression of the external argument via existential closure.

In order to account for these patterns we adopt the proposal in Doron (2003) and Alexiadou and Doron (2012), working within Distributed Morphology, that passives are brought about by merger of a head Pass above VoiceP, the phrase in which the external argument would have otherwise been introduced.

In the syntax, Pass is incompatible with merger of a DP in Spec, VoiceP immediately below it. Bruening (2013) implements this constraint as a selectional requirement on the size of the VoiceP combining with the passive head. In the semantics, Pass likewise brings about existential closure over an implicit external argument, (17):

- (17) $[[\text{Pass}]] = \lambda e \exists x.e \ \& \ \text{Agent}(x,e)$ (or see the proposal in Bruening 2013)

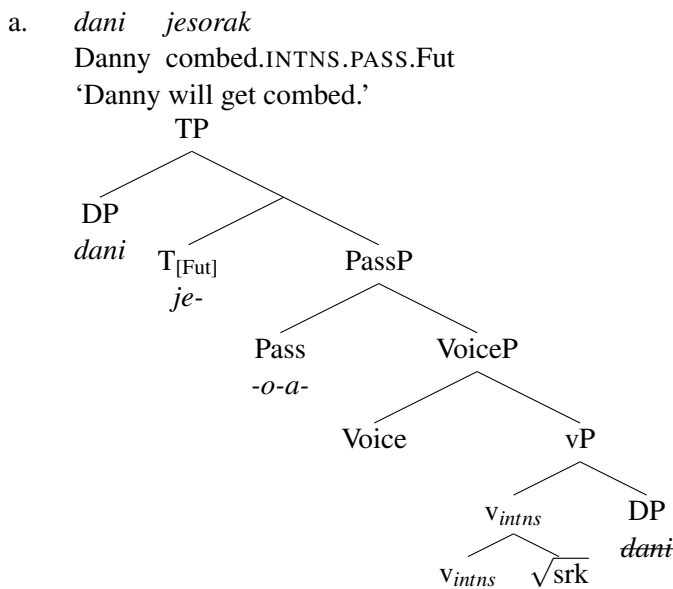
Doron (2003) observes that in Hebrew, the external argument in a passive clause (whether implied or introduced using a *by*-phrase) must be agentive and cannot be a cause. For example, *hefmid* ‘destroyed’ can have a Cause subject (e.g., the environment, the fire, the scandal, etc.) but the implied external argument or overt *by*-phrase subject for its passive counterpart *hufmad* ‘was destroyed’ may only be a volitional or self-propelled actor (see also Folli and Harley 2008). The agentivity requirement is likely brought about by the passive morpheme in

to these two lexical categories. Accordingly, we analyze the synthetic forms as verbal and the analytic forms as adjectival.

- (21) a. *ha-arafel texef jexase et kol ha-rexov*
 the-fog soon will.cover ACC all the-street
 ‘The fog is about to cover the entire street.’
- b. **ha-arafel ha-kaved jihie mexase et kol ha-rexov*
 the-fog the-heavy will.be cover.INTNS.Pres ACC all the-street
 (int. ‘The heavy fog will be covering the entire street’)

Recent syntactic analyses of adjectival passives have motivated an embedded VoiceP layer (McIntyre 2013; Alexiadou et al. 2014; Bruening 2014; Doron 2014). The main difference between verbal passives and adjectival passives is that VoiceP is embedded by a verbal passive head in the former and by an adjectival/aspectual head in the latter. Full structures are given next. For an account of how the nonconcatenative morphology itself is instantiated, i.e. how the functional heads get mapped to vowels, see Tucker (2015) or Kastner (2017).

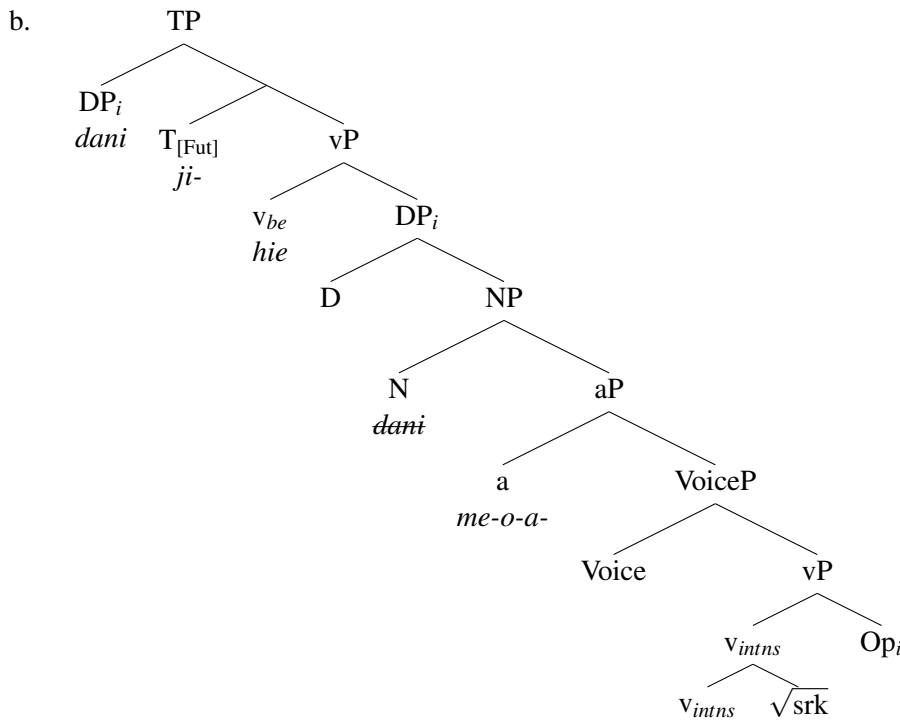
(22) Synthetic, verbal passive:



The internal argument of adjectival passives has been proposed by Bruening (2014:385) to be an Operator, coreferential with the noun interpreted as the argument. We adopt this treatment of adjectival passives in our analysis of Hebrew.

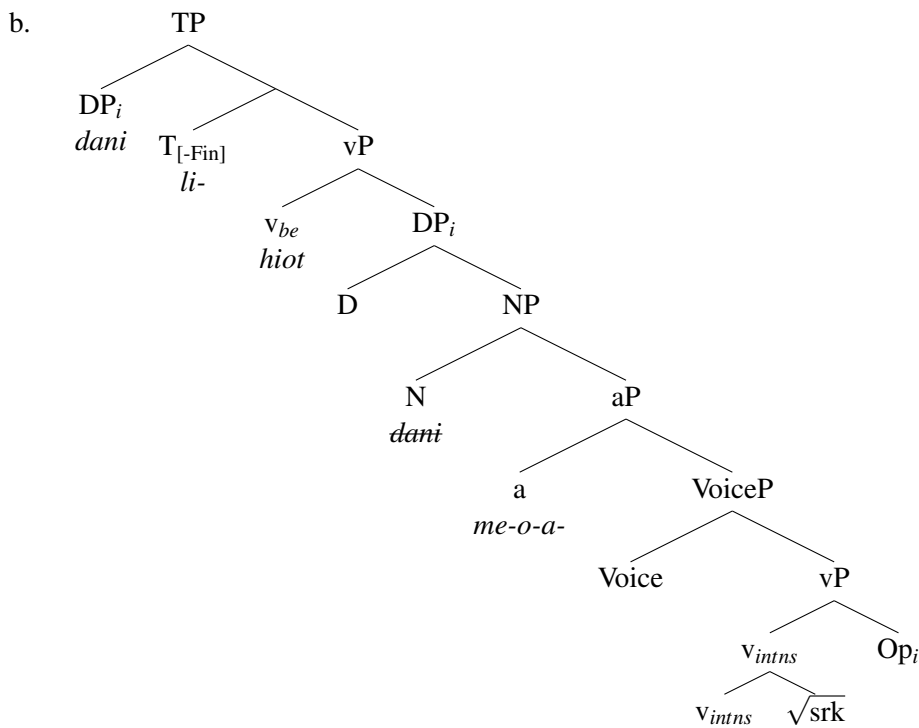
(23) Analytic, adjectival passive:

- a. *dani jihie mesorak*
 Danny will.be combed.INTNS.PASS.Pres
 ‘Danny will be combed (already).’



The derivation is similar for non-finite environments. The analytic passive form is not in violation of (19) as $T_{[-Fin]}$ selects a vP, not a PassP.

- (24) a. ... *garam le-dani lihiot mesorak*
 caused to-Dani to.be combed.INTNS.PASS.Pres
 ‘... caused Dani to be combed.’



3.2.4 Interim review

To sum up, we have documented three differences between the synthetic and analytic passive, attributing them to the structural differences between the two constructions. First, synthetic forms are eventive whereas analytic ones are stative, a fact which follows straightforwardly if the former are verbs and the latter are adjectives. Second, disjoint reference is predicted on the mainstream analyses of verbal and adjectival passives implemented above: the Pass head rules out an external argument, whereas the adjectival head does not (Spathas et al. 2015 suggest

that the coreference effect is written into the semantics of the Pass head). Third, the difference in interpretation of idioms is not predicted but is expected from the literature on semantic drift in adjectival passives (Wasow 1977:et seq).

3.3 Competition in Hebrew

As shown above, the three differences between synthetic and analytic passives in Hebrew follow naturally under an analysis in which the two are separate kinds of constructions, with different underlying structures. In this section we explain how the two do not compete with each other in any coherent way.

3.3.1 Blocking

Let us cash this reasoning out for the Blocking approach of Section 2.3.2, formalizing the analysis with the infinitival passive *lihiot mesorak* ‘to be combed’. The analytic form in (25b) satisfies MARKEDNESS on any number of definitions of the constraint: either (25b) has the same number of morphemes as (25a) in one word fewer—which is how Latin was analyzed in Kiparsky (2005)—or the synthetic form violates $*[T_{[-FIN]} PASS]$, an implementation of our own selectional constraint in (19). We have already shown that in Hebrew the two forms are not equivalent in terms of EXPRESSIVENESS.

(25) Analytic form in a paradigm gap for ‘to be combed’

$T_{[-FIN]} PASS \sqrt{COMB}$	MARKEDNESS	EXPRESSIVENESS
a. (Synthetic, gap)	*!	
ב. <i>lihiot mesorak</i>		*

Even though such an analysis can be formalized, it does not form an argument for a blocking account. This is because the forms ought to be listed in entirely separate paradigms, as MARKEDNESS and EXPRESSIVENESS only regulate within-paradigm (inflectional) patterns (Kiparsky 2010). If the two forms must be listed in separate paradigms, then there is no paradigm gap and no blocking. The inevitable consequence is that the Blocking account must allow for non-derivable expressions if it is to be falsifiable, since there are no synonymous expressions that can be used instead. And conversely, if it allows for non-derivable expressions, the notion of blocking becomes devoid of content since any case of purported blocking can be reduced to non-derivation of a given form. A blocking approach cannot deal with systematic gaps without conceding that analytic and synthetic forms must be allowed to be generated independently of each other. This claim can be countered if a language was found in which the synthetic and analytic forms truly are equivalent in meaning, i.e. in terms of EXPRESSIVENESS.

The point is not that the Blocking account cannot state the facts; it is that none of its underlying assumptions do any work. In contrast, a realizational approach such as that of Embick and Marantz (2008), which we follow here, does not involve competition between words or phrases. Forms may or may not be generated for independent reasons: if they are generated they end up meaning what their compositional semantics means, and if they are not generated it is not due to being blocked by another form.

3.3.2 Neutralization

The Neutralization view (Section 2.3.3) accepts that the synthetic and analytic forms are different in meaning. Assuming that deviations from the input meaning are allowed, how are these violations assessed? The answer is fairly straightforward so long as we confine ourselves to *wh*-movement and scope facts (Legendre 2009): whether a *wh*-phrase is present or not as in the Italian example, or whether scope is faithful to the ordering of operators in the input. If two operators have the order [Op1 Op2], and the candidate has [Op2 Op1] or just [Op1], it is relatively clear how to count violations (or at least what assumptions must be made).

The same approach can be used for cases of generalized deponency, in which the “wrong” morphological form is chosen for a given syntactic configuration. Müller (2013) discusses cases in which certain nouns show ergative singular endings instead of plural ergative ones, for example. His solution is to rank identity to number marking lower than the alternatives in an OT grammar, so that a candidate unfaithful to number but faithful in other respects will be chosen.

In the current case, however, it is far less clear how faithfulness to stativity, idiomatic interpretation and coreference should be implemented. Assume the tableau in (26), where the synthetic gap competes with the analytic adjectival passive and with an additional candidate, a past tense verb, (26c). This candidate violates

faithfulness to input tense. The adjectival passive, (26b), violates three semantic faithfulness constraints, meant to correspond to the three differences discussed earlier in this section.

(26) Analytic form in a paradigm gap for ‘to be combed’

	T _[-Fin] PASS ₂ COMB ₃	MARKEDNESS	FAITH(STATE)	FAITH(T)	FAITH(IDIOM)	FAITH(COREF)
	a. F ₁ F ₂ F ₃ (Synthetic, gap)	*!				
desired ^{רצוי}	b. lihiot ₁ mesorak _{3,4}		*		*	*
actual ^{מציאות}	c. sorak			*		

If we are counting the pure number of violations, (26c) has only one violation of Faithfulness. To solve the problem, one would need to rank FAITH(TENSE) \gg FAITH(STATIVE), FAITH(IDIOMS), FAITH(COREFERENCE). Two issues now emerge.

First, on such an approach, the grouping together of the three semantic faithfulness constraints is an accident. Yet they group together because of the difference in structure between the two forms, an explanation which is lost if the three faithfulness constraints are stated as such.

Second, the factorial typology in fact predicts that in some language, it is possible to have the ranking FAITH(IDIOMS) \gg FAITH(TENSE) \gg FAITH(STATIVE), FAITH(COREFERENCE). Perhaps a finer-grained theory would be able to group these constraints under one meta-constraint; that much would amount to a similar claim to ours.

3.4 Summary

Hebrew passive verbs 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 are adjectival passives employing the passive participle which exist independently of the verbal passive paradigm. Three clear differences exist between synthetic and analytic forms: stativity/eventivity corresponding to different derivational sources, idiomatic readings, and possible coreference of internal and external argument. On competition-based theories, the gap should be the result of one form blocking another, but this is not the case. Hence a competition-based account is not appropriate for the Hebrew paradigm gap, and is arguably untenable in general. We apply similar logic to Latin next.

4 Latin nonactive voice

This section revisits the paradigm gap of Latin nonactive voice as discussed by Embick (2000), Sadler and Spencer (2001), Kiparsky (2005) and Bjorkman (2011, 2014), a.o. As in the previous section, the facts militate against a competition-based view of morphosyntax. The current section jumps right in to the discussion of competition. Once that point has been established, we go on to present our own analysis in Section 5.

4.1 The gap

Latin has three tenses (past, present, future) and two aspects (perfect and imperfect). Verbs can also appear in the subjunctive mood, which we do not address here. In addition, there is a morpheme that has often been taken to indicate passive voice as in (27), and see Embick (2000) or Kiparsky (2005) for additional examples. However, this morpheme also denotes various kinds of anticausatives, (28), and reflexives, (29).⁶ We follow Alexiadou and Doron (2012) and Kallulli (2013) in using the umbrella term “nonactive voice” when referring to this suffix, glossed NACT.

- (27) *laud-a-ba-t-ur*
 praise-Past-3SG-NACT
 ‘he/she was praised’

⁶Examples found via Miller (2010), who calls NACT the medio-passive.

- (28) 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 insula 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)
- (29) 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” and do not form reflexives with NACT (Miller 2010). Others, the famous class of deponent roots, can only appear with NACT but have active meanings. They are discussed in Section 4.2.1 below.

The relevant observation is that Latin does not have dedicated passive morphology, only dedicated non-active morphology (we return to this difference in Section 5.1). At issue is the interaction of this morpheme with the perfect suffix. The nonactive and perfect can each appear on their own as in (30a–b), but cannot be combined, (30c). Instead, an analytic form may be used, made up of the perfect participle and the copula, (30d).

- (30) a. *laud-ā-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-ā-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'

- (31) The “synthetic-analytic alternation” in Latin nonactives for the verb *laudat* ‘he praises’:

	Active	Synthetic nonactive	Analytic paraphrase
Present imperfect	<i>laudat</i>	<i>laudātur</i>	<i>laudātus est</i>
Present perfect	<i>laudāvit</i>	—	<i>laudātus est/erat</i>

Some previous analyses have glossed over the aspect of the auxiliary in the analytic constructions (though see Sadler and Spencer 2001). For example, Kiparsky (2005) puts present imperfect *sum* under the label “present perfect” owing to the perfectivity of the participle. The result is a blurring of the lines between morphosyntactic perfectivity (as in perfect *erat/fuit* vs imperfect *est/sum*) and semantic perfectivity owing to the usage of the perfect participle (Embick 2000:189ff6). Gildersleeve and Lodge (1903:§250) note that perfective *fuit* is “[T]he favorite form when the participle is frequently used as an adjective: *convivium exōrāntum fuit*, ‘the banquet was furnished forth.’” Possible variation might also arise between (morphosyntactic) tenses with equivalent semantics; see Freese (1843:§218) on this point, and see Bjorkman (2014:31ff28) for additional notes on which auxiliaries

might combine with the participle. When we speak of tense or aspect we will always do so in a morphosyntactic sense rather than a semantic one.

Kiparsky (2005) proposes a Blocking explanation for the gap, in which there are too many features for a single cell in the paradigm (synthetic nonactive perfect), and as a result only the analytic form is available. As with Hebrew, this reasoning only makes a compelling case for Blocking in paradigm gaps if the two forms are equivalent with regards to EXPRESSIVENESS. Yet we will argue once again that this is not the case, that we are faced with a difference between synthetic verbal forms and analytic adjectival forms, and that a Neutralization approach is likewise limited in its ability to explain the facts.

4.2 Blocking and Latin

Kiparsky (2005) takes the Latin nonactive as the paradigm case of blocking in his theory. For him, features such as [Pres] and [Pass] are functions taking the predicate or another function as their argument, such that $\text{Pres}(\text{Past}(\text{Speak})) = \textit{has spoken}$, $\text{Past}(\text{Past}(\text{Speak})) = \textit{had spoken}$, and so on. The form generated by $\text{Pres}(\text{Past}(\text{Pass}(\text{Speak})))$ is then unique in the Latin paradigm in that it contains three features.⁷ This leads to violation of MARKEDNESS: there are too many features for one cell in the paradigm. Once again, an impossible synthetic form is assumed to be blocked by an analytic form which is equivalent to it in terms of EXPRESSIVENESS.

There are two main issues with this account. First, Kiparsky (2005:126) 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 therefore unable to fully explain the Latin facts.⁸

The other issue is that the perfect participle (used in analytic forms) exists in the nominal-adjectival system (see Sadler and Spencer 2001 for some examples), which is not verbal, just as the Hebrew adjectival passive exists independently of the verbal passive. Our plan of attack in Section 3.1 was to show that synthetic and analytic forms are different: one is verbal and the other adjectival. This distinction is well motivated in Hebrew, as discussed in the previous section; but matters are more difficult in Latin for a number of reasons. First, native speaker judgments are impossible to collect, and the kind of corpus work necessary to compile convincing diagnostics lies beyond the scope of this article. Second, 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 or is irrelevant (in contrast to the Hebrew passive). Third, the argument from idioms is inconclusive due to lack of data, and is relegated to Appendix A for completeness.

Focusing on the distributional facts, then, Bruening (2014) has argued that of the many tests meant to tell apart verbal from adjectival passives, only a few survive scrutiny. We have adapted a few of his tests for Latin with admittedly limited success. Nevertheless, we believe that the results are strongly suggestive, and we will use them to argue against the analysis in Kiparsky (2005). Once more, a difference will emerge between the synthetic verbal non-active and the analytic adjectival non-active.

4.2.1 Missing inputs

We have asserted that the perfect participle exists independently of the synthetic verb, a claim that would be consistent with the adjectival passive being generated separately from the synthetic nonactive. Here is why. Bruening (2014:408) argues that cases of “missing inputs” can separate adjectival and verbal passives. For instance, a *hagridden* man did not undergo any **hagriding*: since the verb does not exist, it is clear that the adjective is derived separately.

For Hebrew, the argument was already pursued by Horvath and Siloni (2008). In Latin it looks as follows. If the forms are equivalent, they ought to be derived from one underlying active verb by passivization (or rather, detransitivization).

(32) active verb $\begin{matrix} \longrightarrow & \text{non-active verb} \\ \longrightarrow & \text{perfect participle} \end{matrix}$

⁷See Kiparsky (2005) for brief mentions of Marathi and Sanskrit as well.

⁸This is not to say that complexity measures should be ruled out in general; see Dunbar and Wellwood (2016) for one concrete proposal.

What we would need to find for Latin is a class of perfect participles which have similar “missing inputs”, thereby supporting the claim that perfect participles are part of a genuinely different construction than verbal forms.

- (33) a. source 1 → non-active verb
b. source 2 → perfect participle

The so-called deponents serve this function. As discussed in detail by contemporary authors such as [Aronoff \(1994\)](#), [Sadler and Spencer \(2001\)](#), [Kallulli \(2013\)](#) and [Müller \(2013\)](#), among others, deponent verbs are verbs with nonactive morphology but active syntax. That is to say, although the suffix NACT appears on them, it is some kind of morphological artifact; the verbs themselves are unergative or transitive. For example, the deponent verb *sequor* ‘to follow’ is syntactically transitive but has no morphologically active forms:

- (34) a. Regular:
amo-r ‘I am loved’ < *amō* ‘I love’
b. Deponent:
sequo-r ‘I follow’ ≠ **sequō* ‘I follow’

Even though there is no active form available in the grammar, the perfect participle is derived as with non-deponent verbs, from what [Aronoff \(1994\)](#) calls the “t-stem”. Crucially, the perfect participle does not include NACT:

- (35) a. Regular: *amā-t-us* ‘loved.PASSPTCP’
b. Deponent: *secū-t-us* ‘followed.PASSPTCP’

If we are to say that regular perfect participles are derived from the active verb, then we would be forced to say the same for deponents. But this is impossible, since there is no morphologically active deponent verb. The only viable option is to conclude that the perfect participle is derived independently of the active verb. In our formalization in Section 5 we attribute this unity of stems to a vP stem being embedded by different functional heads, instantiating (33) as (36) and rejecting (32). The important point is that the availability of a regular perfect participle for all roots implies that perfect participles—the form used in analytic nonactives—are different beasts than synthetic nonactive verbs. The two do not stand in competition with each other.⁹

- (36) a. root + verbal head + NACT → non-active verb
b. root + adjectival head → perfect participle

To wrap up the argument for distinct structures, we would like to point out a number of possible differences which we have not pursued further. For instance, [Gildersleeve and Lodge \(1903:§593\)](#) note that the protasis of a conditional clause “may be contained in a Participle”, although none of their examples demonstrate perfect participles. This possibility is elaborated on in a textbook ([Moreland and Fleischer 1977:85](#)), and we suspect that the participle is able to fulfill a number of grammatical roles that a verbal nonactive cannot. [Giorgi and Pianesi \(1991:205ff26\)](#) suggest that there is a difference in perfective semantics between analytic and synthetic nonactives. But we have not examined these cases in depth; we believe that the burden of proof now lies with those who wish to argue that two syntactically distinct forms are semantically equivalent.

For completeness, let us consider the theory of stems and affixes in [Kiparsky \(2005:121–122,132\)](#). That system is set up as follows: nonactive marking is a conjugational feature [\pm 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.

- (37) [\pm Passive] verb stems in [Kiparsky \(2005\)](#):
- Unspecified, in which case the verb may be active or passive.
 - [+Passive], which results in deponent stems.
 - [-Passive], which results in stems that [Kiparsky](#) calls *activa tantum*. These are verbs that never take NACT in the present, e.g. *perdō* ‘destroy’.

⁹Though see [Sadler and Spencer \(2001\)](#) for an analysis that flips this argument on its head, and [Kiparsky \(2005\)](#) for a critique of their approach.

- (38) Affixes are also specified for [\pm Passive]:
- Person/number agreement is active and [-Passive]: *-t* ‘3SG.Pres’
 - NACT endings are [+Passive]: *-tur* ‘3SG.NACT’
 - All other endings (e.g. the present/active participle) are unspecified, and also nonfinite: *-ns* ‘present participle’

Affixes (38b–c) can combine with a [+Passive] deponent stem without a clash: (38b) because it is [+Passive] itself, and the non-finite affixes (38c) because they are underspecified.

There are two problems with this system. First, since [+Passive] suffixes are distinct from [-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 conjugation theory of deponents also undergenerates. The future passive participle (“gerundive”, *-nd* form) exists for all three types of stems: regular, deponent and “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. None of these problems arise if we discard the idea that some passive/nonactive feature must make its way from the verbal stem through the rest of the paradigm: a “missing input” entails that the synthetic and analytic forms are derived differently.

4.3 Summary

This section set out to show that Latin synthetic nonactive verbal forms are verbs whereas analytic passive forms are adjectives, and that the two forms are not equivalent. We would rate this effort a qualified success. While the evidence is not as clear-cut as in Hebrew, we believe it is strongly suggestive. The consequence is that any attempt to have synthetic and analytic nonactive forms compete against each other, as in Kiparsky (2005), faces the same problems discussed in Section 3.3 for Hebrew. Likewise, the Neutralization approach faces similar problems to those confronting it in Hebrew. It is not clear in what sense the adjectival perfect is “close enough” to a nonactive verbal form, though perhaps this can be elucidated in future work within the Neutralization/OT framework.

We now move on to our own analysis of the Latin verbal system.

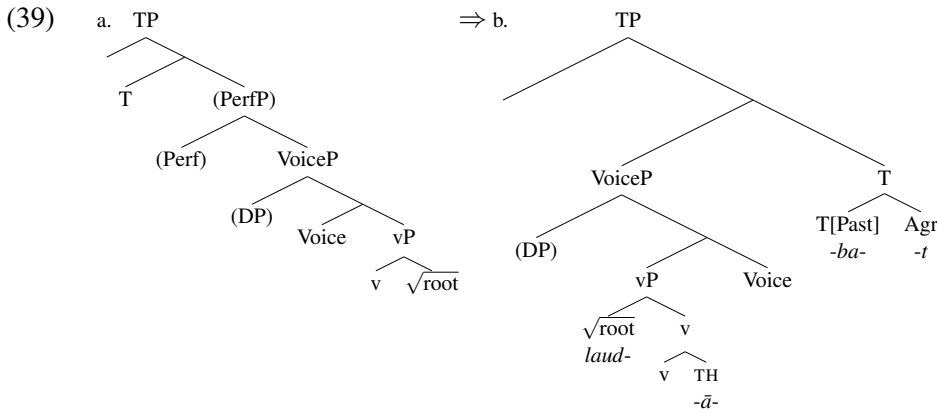
5 A syntactic analysis of the Latin verb

This section is devoted to a technical implementation of the generalizations noted above. We first sketch our proposal, then show how it makes a number of correct predictions that lexicalist systems of the Blocking and Neutralization kind cannot, and finally compare it with the prominent syntactic analysis of Embick (2000) and related works.

5.1 The syntax of the Latin paradigm gap

We assume the structure in (39a) for Latin, following Embick (2010). Theme vowels are generated here in a node Th projected postsyntactically under *v* (Oltra Massuet 1999) but could just as well be adjoined to the root.¹⁰ In perfect constructions the Perf 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 typical of Latin: $\sqrt{\text{root}}\text{-TH-(Perf)-T-Agr}$. We represent the structure head-initially for ease of exposition (39a), with the assumption that Latin linearizes to the right at PF (39b). Not much hinges on this point, and the structure could be represented head-finally as well. The tree in (39b) shows the result after linearization for the past tense verb *laudābat* ‘he praised’ (past imperfect).

¹⁰This kind of analysis stands in contrast to one in which the theme vowel is an inherent part of the verbal stem (Bermúdez-Otero 2013, 2016), and is largely compatible with one in which the theme vowel spells out *v* itself (Svenonius 2004).

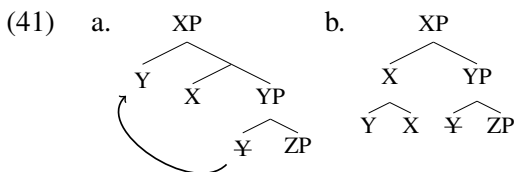


What of nonactive voice? We propose that it is brought about in the syntax by merger of a special Middle Voice head which we annotate Voice_{\emptyset} , similar to Voice_{\emptyset} in German (Schäfer 2008), Voice_{\emptyset} in Hebrew (Kastner To appear), Voice_{intr} in English (Bruening 2014), Middle Voice in Greek (Spathas et al. 2015) and $\text{Voice}_{\{\}}$ in Icelandic (Wood 2015). This head prohibits the merger of a DP in its specifier. The overt spell-out of Voice_{\emptyset} is notated with the placeholder NACT, as in the following Vocabulary Items:

- (40) a. $\text{Voice} \leftrightarrow \emptyset$
 b. $\text{Voice}_{\emptyset} \leftrightarrow \text{NACT}$

Note the difference between Hebrew and Latin: in the former it is easy to demonstrate that active verbs are passivized in the syntax (Section 3.2). In Latin, the discussion in Section 4.1 concluded that one non-active head is shared by passives, anticausatives, inchoatives and reflexives. This kind of crosslinguistic difference was anticipated by Alexiadou and Doron (2012), who explicitly argued that some languages derive passive verbs using a distinct Pass head (e.g. Hebrew), while others “bundle” all non-active morphology together into one non-active variant of Voice (e.g. Greek and Latin).

As an additional assumption in our own analysis, we adopt the treatment of head movement as phrasal movement proposed in Matushansky (2006), an assumption we require in order to reach the right order of exponents: 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. In (41), Y raises to the specifier of XP and then undergoes m-merger with X, forming the complex head. We will see this operation in action in (45)–(46).



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 phi-features on Agr. For example, in the second person present NACT appears as *-ri-* before the person/number marker, (42), but in the third person it appears as the suffix *-ur*, (43).

- (42) a. *port-ā-s*
 $\sqrt{\text{port-TH-2SG}}$
 ‘you carry’
 b. *port-ā-ri-s*
 $\sqrt{\text{port-TH-NACT-2SG}}$
 ‘you are being carried’

- (43) a. *port-a-t*
 $\sqrt{\text{port-TH-3SG}}$
 ‘he/she is carrying’
- b. *port-ā-t-ur*
 $\sqrt{\text{port-TH-3SG-NACT}}$
 ‘he/she is being carried’

Table 5 lists the forms of NACT in the different phi-feature combinations, in the past and present tenses. Note how the exponent of T always appears before NACT+Agr. When the verb inflects for first and third person, NACT appears at the right edge, but not when the subject is second person. We take this as evidence that Agr and NACT can undergo local dislocation after linearization (Embick and Noyer 2001; Embick 2007).

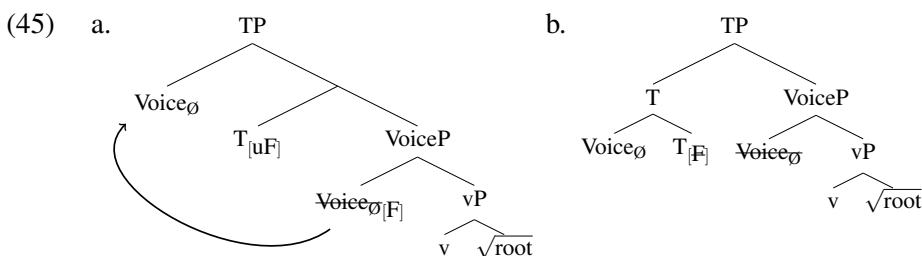
		Active	Nonactive
1SG	Pres	amō	amo- r
	Past	amā-bam	amā-ba- r
1PL	Pres	amā-mus	amā-mu- r
	Past	amā-ba-mus	amā-ba-mu- r
2SG	Pres	amā-s	amā- ri -s
	Past	amā-bā-s	amā-bā- ri -s
2PL	Pres	amā-tis	amā- mini
	Past	amā-bā-tis	amā-bā- mini
3SG	Pres	amā-t	amā-t- ur
	Past	amā-ba-t	amā-ba-t- ur
3PL	Pres	ama-nt	ama-nt-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

Table 5: Linear ordering of T, NACT and person/number morphemes.

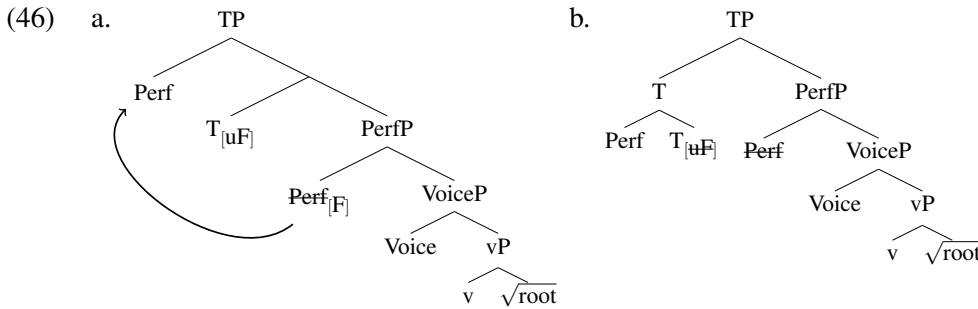
We assume that local dislocation can apply once to a pair of adjacent vocabulary items, if one is conditioned by the other. Put otherwise, a given exponent cannot local-dislocate its way across a number of other intervening exponents. This constraint lies at the heart of locality-based approaches such as Embick (2010). For example, T and NACT undergo local dislocation when T is 1st or 3rd person (and fuse when Agr is 2nd person plural):

- (44) a. $\sqrt{\text{laud-v-NACT-T}}[\text{Past,3SG}]$
 b. \Rightarrow *local dislocation*
 $\sqrt{\text{laud-v-T-NACT}}$
 c. \Rightarrow *adjoin dissociated morphemes*
 $\sqrt{\text{laud-v-TH-T-Agr-NACT}}$
 d. \Rightarrow *spell out Vocabulary Items*
laud-ā-ba-t-ur

For us, this means that NACT ends up being linearly adjacent to the complex head T+Agr. We propose that Voice raises to Spec,TP in the syntax in order to satisfy some verbal feature [F] on T, (45a), just as in the Chomsky (1957) analysis of the auxiliary system in English (cf. the shared verbal feature [Infl] in Adger 2003 and Bjorkman 2011, 2014). At this point Voice undergoes m-merger with T and appears on its left, (45b). 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).



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, (46a), linearizing correctly to the left of T+Agr, (46b): *laud-ā-ve-ra-t* $\sqrt{\text{laud-TH-Perf-Past-3SG}}$ ‘he had praised’.



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 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. T+Agr cannot “see” NACT over an intervening overt Perf morpheme: $\sqrt{\text{root-v-TH-NACT-Perf-T+Agr}}$. 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*. The correct Vocabulary Items cannot be chosen. We return to the assumptions behind this analysis in Section 5.3.

The perfect participle, which together with the copula makes up the analytic adjective, is derived differently: a vP containing *v*, a theme vowel and the root is embedded under an adjectival head. This is the participle, which then combines with the copula. The overall picture is similar to that of Hebrew in (22)–(23):

- (47) a. Verbal, *laudātur*: [T [Voice \emptyset [v $\sqrt{\text{LAUD}}$]]]
 b. Adjectival, *laudātus est*: [T [Voice [v_{be}] [a [v+TH $\sqrt{\text{LAUD}}$]]]]

We do not assume a Voice layer in the adjectival passive, since at this point we have no evidence for it. In contrast, the existence of a theme vowel implicates the existence of the *v* layer.

Deponents can be derived in our theory in a manner essentially similar to that of other analyses within Distributed Morphology (Embick 2000; Haugen and Siddiqi 2013): the suffix NACT is a special exponent of Voice licensed only by certain roots, avoiding the problem of missing inputs.

- (48) Voice \leftrightarrow NACT / ___ { $\sqrt{\text{sequ}}$, $\sqrt{\text{hort}}$, ... }

The current formulation of (48) raises an issue that is beyond the scope of the current article. Deponents cannot be accounted for purely in terms of allomorphy. This is because TH ought to intervene between the root and Voice, eliminating the conditioning environment necessary for (48). The case of active verbs which require non-active morphology was raised explicitly for Italian by Burzio (1986:39), and it has since been an open question how to account for them. Pending a full treatment of deponents and their kin, there are a number of analytical possibilities here. It could be the case that such deponent licensing of Voice happens before TH is inserted (recall that the latter is inserted post-syntactically): deponent licensing of Voice happens in the syntax proper via some form of feature checking. Such an analysis would be more in line with the feature-oriented aspects of Embick (2000) and Haugen and Siddiqi (2013), which we return to in Section 5.4. An alternative would be to assume that Voice \emptyset is merged in these cases and that the external argument is licensed separately by a higher head, but it would then be unclear how the root factors into the equation. We leave these questions to future work, proceeding now to discuss the empirical benefits of a syntactic analysis. Additional discussion of deponency can be found in Appendix B.

5.2 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 is expected to arise instead.

Testing 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.

5.2.1 Perf Conditions Agr, T Blocks 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 spelled out by an overt exponent such as *ba/ra*, (49), or *b/r*, (50), the 1SG ending for a Class I root like $\sqrt{\text{am}}$ ‘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 after the perfective morpheme *v*, namely *-ī*, (51).

- (49) a. *am-ā-ba-m*
 $\sqrt{\text{am-TH-Past-1SG}}$
 ‘I loved’
 b. *am-ā-ve-ra-m*
 $\sqrt{\text{am-TH-Perf-Past-1SG}}$
 ‘I loved’
- (50) a. *am-ā-b-ō*
 $\sqrt{\text{am-TH-Fut-1SG}}$
 ‘I will love’
 b. *am-ā-ve-r-ō*
 $\sqrt{\text{am-TH-Perf-Fut-1SG}}$
 ‘I will have loved’
- (51) a. *am-ō*
 $\sqrt{\text{am-TH.1SG}}$
 ‘I love’
 b. *am-ā-v-ī*
 $\sqrt{\text{am-TH-Perf-1SG}}$
 ‘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 blocks 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).

5.2.2 Root Conditions Perf, Theme Blocks the Conditioning

Embick (2010:72) also notes that the perfect allomorph itself can be conditioned: the root may 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.¹¹ This pattern is consistent with a locality-based approach if the root and Perf are linearly adjacent.

- (52) Embick (2010:71–72):
- a. *am-ā-vi-mus*
 $\sqrt{\text{LOVE-TH-Perf-1PL}}$
 ‘we have loved’ (Default *-v/vi-*)
- b. *scrip-si-mus*
 $\sqrt{\text{WRITE-Perf-1PL}}$
 ‘we have written’ (Special *-si-*)

¹¹This 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; see Calabrese (2015) for related discussion of Italian and Latin.

- c. $v\bar{e}n-i-mus$
 $\sqrt{\text{COME-Perf-1PL}}$
 ‘we have come’ (Special *-i-*)

Importantly, this allomorphy is root-specific and does not depend on the theme vowel. 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.

5.2.3 Perf Conditions T

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

- (53) a. $am-\bar{a}-ba-t$
 $\sqrt{\text{am-TH-Past-3SG}}$
 ‘he/she loved’ (Default *-ba-*)
- b. $am-\bar{a}-ve-ra-t$
 $\sqrt{\text{am-TH-Perf-Past-3SG}}$
 ‘he/she had loved’ (Special *-ra-*)

5.2.4 Theme Conditions T, Perf Blocks 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), as in (54). However, overt Perf blocks the contextually conditioned endings, syncretizing the different classes in the perfect, (55). As the grammars put it, the person endings in the perfect do not change from conjugation to conjugation.

- (54) a. $am-\bar{a}-b-\bar{o}$
 $\sqrt{\text{am-TH-Fut-1SG}}$
 ‘I will love’ (Class I)
- b. $pet-a-m$
 $\sqrt{\text{pet-TH-Fut.1SG}}$
 ‘I will seek’ (Class III)
- (55) a. $am-\bar{a}-\boxed{ve}-r-o$
 $\sqrt{\text{am-TH-Perf-Fut-1SG}}$
 ‘I will have loved’ (Class I)
- b. $pet-\bar{i}-\boxed{ve}-r-o$
 $\sqrt{\text{pet-TH-Perf-Fut-1SG}}$
 ‘I will have sought’ (Class III)

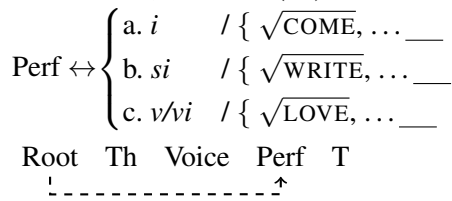
To wrap up, we have given four examples of locality-obeying allomorphy in Latin, in line with the structural system described above. Two of these were discussed by Embick (2010) and two were introduced here. The Blocking and Neutralization approaches are in unfamiliar territory here, since they do not have the serial derivation mechanism necessary for handling this kind of allomorphy, though serialist variants of OT do exist (e.g. McCarthy and Pater 2016). A state of affairs in which “spans” of morphemes can condition allomorphy on each other would likewise overgenerate (Merchant 2015), predicting possible allomorphy where Latin shows syncretism (see Božič 2017 for recent discussion). But a locality-oriented structural theory predicts exactly the kind of conditioning environments that exist—and are on occasion blocked—in the Latin verbal system.

5.3 Systematicity in ineffability

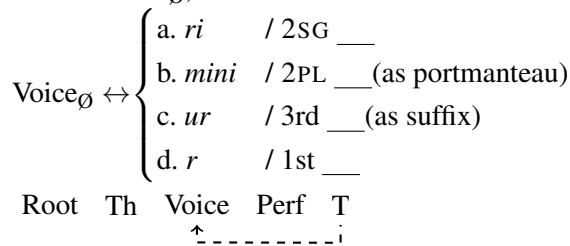
We have argued for a morphotactic analysis of the paradigm gap: the generalization is that two given suffixes cannot co-occur, Voice \emptyset and Perf. Consider some of the relevant Vocabulary Items for the two morphemes in (56)–(57). In a structure that would have been linearized as $\sqrt{\text{root-TH-Voice}\emptyset\text{-Perf-T+Agr}}$, Voice \emptyset needs to “see”

T+Agr but cannot. **Voice** is sensitive to **T** over Perf, but Perf is sensitive to $\sqrt{\text{root}}$ over **Voice** (as shown in Section 5.2.2). The correct allomorphs cannot be chosen, (58).

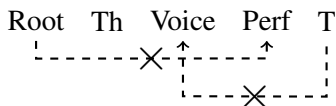
(56) VIs for Perf, based on (52):



(57) VIs for Voice \emptyset , based on Table 5:



(58) Crossing paths in Latin contextual allomorphy:



These VIs will not be defended as such (it is possible that *-ur-*, for example, is default *-r-* preceded by epenthesis); the last forms (57c)–(58d) are usually taken to be the defaults, though their productivity can no longer be tested. But this is a complex system to learn.

We propose, then, that ineffability is likely to arise in such cases of “crossing paths” (cf. Goldsmith 1976; Pesetsky 1982), a claim that awaits crosslinguistic validation. One immediate question is why the learner would not posit an elsewhere form of the morpheme in question. We propose that the allomorphic interactions of the Latin verb render this task more difficult, owing to the overlapping conditioning environments of Perf and Voice \emptyset .

The lack of a default allomorph for Voice \emptyset and Perf is similar to the proposals in Arregi and Nevins (2014), Harley (2014a,b) and Nevins (2015), where some roots have no “elsewhere” form. On this root-based view, it is well accepted that some roots only have semantic interpretation in certain contexts. Harley (2014a) calls these *caboodle* items, because the form *caboodle* is only observed in set phrases such as *kit and caboodle* ‘everything’ (cf. the case of *cran-* in *cranberry*). The proposal in these recent works is that some roots only have phonological interpretation in certain contexts, an idea we have adopted and situated in a particular structural context.

To be clear on what this analysis does and does not accomplish: it presents a specific account of co-occurrence constraints on morphemes, leading us to expect similar cases crosslinguistically. It gives no definitive answer as to why there is no default allomorphy of Voice \emptyset or Perf in the configuration we propose. 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 as in previous work (see Section 5.4), but an overt Perf head that appears precisely between the position in which Voice \emptyset is generated and the position it needs to get to.

This kind of account is consistent with the difference between synthetic verbal forms and analytic adjectival forms argued for above. It also leads naturally to a range of locality-influenced allomorphic predictions. These locality effects are compatible with another syntactic account of the Latin facts, to which we now turn.

5.4 Previous syntactic accounts

By this point, we hope to have shown that neither the Hebrew nor the Latin paradigm gaps provide evidence for competition between words and phrases; if anything, they provide evidence against such an approach. This claim has been supplemented by our own analysis. We will now point out two issues with the leading syntactic analysis of the Latin gap and its more recent offshoots.

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 $\sqrt{\text{root-TH}}$

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 is 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 competition at the word or multi-word level.

In support of this view we have presented three diagnostics based on the passive paradigm in Hebrew, where it is clear that the synthetic (verbal) and analytic (adjectival) 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 arguments 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) forms that are equivalent in meaning (Blocking) or merely similar (Neutralization). These are then compared to one another in terms of metrics such as markedness. For a competition-based theory to have any bite, ungrammaticality must always be the result of being blocked by a winning form. The Hebrew data refute this claim, as do the Latin nonactive data. Therefore, neither Blocking nor Neutralization are necessary to account for the current cases. Since the main motivation behind these approaches was to account for perceived cases of competition, it is questionable whether they are necessary in general.

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, systematic gaps can no longer serve as evidence. The opposite is the case: our investigation of paradigm gaps takes them to be the result of standard structure building, without need for paradigm-specific mechanisms.

Alongside the general claim on paradigm gaps, we have also highlighted some empirical benefits of a syntactic approach to word-building. For Latin, we 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. A lexicalist view cannot predict these allomorphic interactions without being augmented with hierarchical word-internal structure.

To conclude, there are systematic paradigm gaps in Hebrew and Latin: forms that simply cannot be expressed and for whom a paraphrase does not do the same syntactic and semantic work. We have explained how such forms can be identified, suggesting that their existence provides support for a syntax-based theory of word formation in which blocking is limited to competition between lexical roots. In so doing, we have demonstrated that competition is unnecessary in the building of multi-word expressions.

A Latin idioms

If 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. Given an idiom in the analytic nonactive perfect, we can ask whether the synthetic form retains the idiomatic reading of the analytic one. For instance, Caesar was famously reported to have said *alea iacta est*, (61), upon crossing the Rubicon, meaning ‘the die is cast/thrown’, with the idiomatic reading ‘we have passed the point of no return’.¹² Does the idiomatic meaning exist in the imperfect, (62)?

(61) *alea iacta est*
bone throw.PASSPTCP.NOM is.Imperf
‘the bone has been thrown’, ‘the die has been cast’

(62) *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.¹³ Some of the classicist scholars we have consulted do think that the idiomatic reading

¹²See Embick (2000:189ff6) on stative readings of the perfect, including “the die is cast.”

¹³Manuzio, Paolo: *Adagia Optimorum Utriusque Linguae Scriptorum Omnia, Quaecunq̄ue Ad Hanc Usque diem exierunt: cum plurimis ac locupletissimis indicibus*. Ursellis: Ex Officina Cornelii Sutorii, impensis Lazari Zetzneri. Page 170. Retrieved September 2014 from

should hold in the imperfect, but there is no consensus on this issue or clear evidence either way.

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. We would then 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, it would constitute an additional argument against a competition-based analysis.

B Deponency

Deponent verbs have been treated in a number of different theoretical frameworks, as succinctly reviewed by Müller (2013). We contrast these proposals briefly. Müller (2013) divides accounts of deponency into a number of classes, three of which can be straightforwardly applied to Latin. *Property deponency* has been discussed in the main text on the basis of Embick (2000) and related work, and will not be repeated here.

In *form deponency*, active verbs are referred to passive morphology, bypassing regular active morphology (Stump 2006). This approach seems plausible, but it does not explain *defectivity* (Baerman 2007; Müller 2013): the fact that the normal function of passive morphology is no longer available. That is to say, the morphology of Latin deponents does not mark a contrast between active and non-active verbs. Something additional would have to be said in order for this kind of system to be complete. Müller (2013) acknowledges this much for his own OT proposal, speculating that an output-output correspondence constraint could be invoked. In any case, this family of analyses is not demonstrably superior to the one sketched in the main text.

Morphomic deponency accords with the Blocking analysis of Kiparsky (2005) discussed above, and extends to cover Sadler and Spencer (2001) and Hippiisley (2007) as well. These approaches correlate morphomic “active” morphology with active syntax and morphomic “non-active” morphology with non-active syntax. Deponents are special in that they do not let the morphological non-active marking be correlated with syntactic non-active. The drawbacks of this approach were highlighted in the main text.

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