

An argument against the syntactic nature of verb movement

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Recent research into the nature of periphrasis converges on the view that periphrastic forms occupy cells in morphological paradigms. This paper argues that the relative past ('perfect') in Dutch should be understood as periphrastic in this sense. Adopting the current minimalist view on the relation between morphology and syntax, in which inflectional morphemes are not generated in syntax but realized postsyntactically in a morphological component, the analysis leads to the conclusion that the relative past's auxiliary is not an element of narrow syntax either. The paper argues that this approach simplifies the syntactic analysis of Dutch verb clusters. The upshot of the analysis is that since auxiliaries undergo verb-second, verb movement must be a postsyntactic operation, as suggested by Chomsky (2001).

1. Introduction

Like many languages, Dutch has two ways of expressing that an event took place in the past, a simple (synthetic) past and a periphrastic past, often mistakenly associated with perfective aspect. These are illustrated in (1), where it can be observed that the periphrastic tense involves an auxiliary (*hebben* 'have' or *zijn* 'be') and a past participle, typically marked by a prefix *ge-*.¹

(1)	VERB		SIMPLE PAST		PERIPHRASTIC PAST
a.	wandel-t walk-3SG	'walk'	wandel-de walk-PAST.SG	heeft AUX:3SG	ge-wandel-d GE-walk-PART
b.	loop-t walk-3SG	'walk'	liep walk:PAST.SG	heeft AUX:3SG	ge-lop-en GE-walk-PART
c.	gebeur-t	'happen'	gebeur-de	is	ge-beur-d
d.	kom-t	'come'	kwam	is	ge-kom-en
e.	ontdek-t	'discover'	ontdek-te	heeft	ontdek-t

The periphrastic past's auxiliary itself may express the present tense, as in (1), or the (simple) past, yielding the opposition in (2).

(2)	PERIPHRASTIC PAST (PRESENT)		PERIPHRASTIC PAST (PAST)	
a.	heeft AUX:3SG	ge-wandel-d GE-walk-PART	had AUX:PAST.3SG	ge-wandel-d GE-walk-PART

¹ The examples in (1) and (2) are all third person singular.

b.	heeft	ge-lop-en	had gelopen
c.	is	ge-beur-d	was gebeurd
d.	is	ge-kom-en	was gekomen
e.	heeft	ontdek-t	had ontdekt

The periphrastic past tense locates the event in the past relative to a reference point, which may be in the present or in the past, and the tense of the auxiliary refers to the position of the reference point on the time axis. The choice of the synthetic or periphrastic past is independent of the telicity or the progressive/completed nature of the verb/event, showing that the distinction is one of (relative) tense, not aspect.²

The simple past must be used to express cotemporaneity with a reference point in the past. Making a cotemporaneous reference point in the past explicit forces the use of the simple past, to the exclusion of all other tenses:

- (3) [Toen ik binnen kwam] ... Dutch
when I in come:PAST.SG
- a. ... sliep hij
sleep:PAST.SG he
- b. * ... slaap-t hij
sleep:3SG he
- c. * ... heeft hij ge-slap-en
AUX:3SG he GE-sleep-EN

‘When I came in, he was asleep.’

We want to recall this as a test for a) the syntactic presence of a feature PAST and b) a morphological effect correlated with the presence of the feature PAST. Assuming, as is common in current minimalism, that the morphological component is fed by the syntactic derivation, the morphological effect can be described as the selection of a particular form from the relevant paradigm, based on the features associated with the root SLEEP (cf. Halle 1997:428). In this example, the root SLEEP activates the paradigm of the Dutch verb *slapen* ‘sleep’, and the features PAST and SINGULAR associated with the root SLEEP serve to select the unique form *sliep* from that paradigm.

The question how tense and agreement features come to be associated with a verb root has been approached in various ways throughout the history of generative grammar. I will assume a simple, minimalist approach in which a syntactic structure contains a range of *controllers* sharing their feature values with the verb (or, more exactly, with their sister constituents dominating the verb), where the feature sharing process is taken to be a function of Merge (as defined in Chomsky 2001:3). Relevant controllers include the subject (for person and number features) and the tense operator (typically described as a functional head T, but I will remain agnostic as to its syntactic

² For further discussion see Vendryes (1937:89), Kiparsky (2002:117), Verkuyl (2008:20f), Zwart (2011:12), and Broekhuis, Corver and Vos (2015:108).

status). It helps to think of the control relation as c-command (where α c-commands β iff α is merged with β or a constituent dominating β), itself a function of Merge.³

The advantage of this approach to inflectional morphology is that no special mechanisms, such as Affix Hopping, verb raising, or the operations proposed in the context of Distributed Morphology (Halle and Marantz 1993, Embick 2000), need to be invoked to get the functional features to be associated with the verb. Feature sharing (Koster 1987) as a function of asymmetric Merge (Zwart 2005) is all that is needed.

None of this brings us any closer to an understanding of the nature of the periphrastic tense. In particular, it is not clear what the syntactic status of the auxiliary is, and as far as I am aware, this question has not often been explicitly addressed, at least not for Dutch. I think most analyses implicitly take the auxiliary to be a defective verb, generated inside a more layered VP (following the lead of Akmajian, Steele and Wasow 1979:20 for English). Let us call this the *syntactic* approach (which allows for a range of variants, most notably generating the auxiliary in a functional head position), in which the auxiliary is an independently merged member of the Numeration (the set of elements feeding the syntactic derivation).

I can see at least two potential alternative approaches, which we might call *presyntactic* and *postsyntactic*. In the presyntactic approach, the auxiliary and the participle would be syntactically merged in a separate derivation, yielding a cluster to be inserted as a Root into the Numeration for another derivation (the derivation generating the clause in which the periphrastic tense features). In the postsyntactic approach, the derivation would contain just a single verb Root, and the auxiliary will not appear in the syntactic derivation at all; rather, the cluster would happen to fill a cell in the morphological paradigm, in opposition to other (synthetic or periphrastic) members of the paradigm.

The postsyntactic approach is supported by research of the past fifteen years on the relation between inflection and periphrasis, as I will show below. What I want to argue here is that this postsyntactic approach is also supported in that it yields the simplest syntactic derivation, needing no ad hoc mechanisms to complicate the general minimalist procedure sketched above.

If so, I submit that this state of affairs provides an argument in support of Chomsky's (2001:37) conjecture that "a substantial core of head-raising processes (...) may fall within the phonological component". In particular, since auxiliaries undergo verb-second in Dutch, and auxiliaries are only introduced in the morphological component, verb-second must be a postsyntactic process as well.

The discussion is organized as follows. Section 2 discusses recent research in theoretical morphology on the status of periphrastic expressions. Section 3 addresses the question of the division of labor between syntax and morphology in periphrasis. Section 4 argues that deriving the periphrastic past in morphology sheds new light on a range of syntactic problems associated with verb clusters in Dutch. Section 5 concludes.

³ Epstein (1999). Note that the concept of feature sharing between a controller and its sister is different from the probe-goal Agree mechanism of Chomsky (2000:122). See Zwart (2006) for more discussion.

2. Periphrasis and postsyntactic morphology

Let us continue to assume that morphology is postsyntactic, i.e. inflectional affixes do not exist in syntax (neither in functional heads nor on lexical roots). Inflected words exist only in morphological paradigms, which are accessed postsyntactically to find a spell-out for a syntactic terminal. What exists in syntax are roots and grammatical features, the latter instrumental in picking the right form from the paradigm.

The question to be asked here is the following: given that affixes do not exist in syntax, what evidence is there that the auxiliaries featuring in periphrastic tenses exist in syntax? Until recently, the fact that auxiliaries undergo movements like verb-second could be taken as evidence that auxiliaries are syntactically present (cf. Embick 2000:203, Kiparsky 2005:132). But since verb movement is at issue here (it might also be postsyntactic), we need evidence of a different kind.⁴

Recent research into the nature of periphrasis leans heavily towards the alternative position, in which periphrastic forms occupy cells in morphological paradigms (see Chumakina 2013 and Spencer and Popova 2015 for a survey). The construction of a periphrastic expression, on this view, is not a matter of syntactic derivation any more than the formation of inflected word forms.

In the three following subsections, we discuss the key issues figuring in the discussion of periphrasis in theoretical morphology: the status of periphrasis vis-à-vis morphological paradigms, the compositionality of periphrastic expressions, and the process of auxiliatio.

2.1 *Periphrasis and paradigms*

The idea that paradigms may include periphrastic formations appears to have been commonplace in structuralist linguistics (see e.g. Robins 1959:124, Benveniste 1965:130). The thinking here is that paradigms “represent interlocking systems of grammatical oppositions” and where periphrastic expressions are “comparable to single words in the corresponding places of a different paradigm they are obviously to be included in paradigms themselves” (Robins 1959:124).⁵

This position was (silently) abandoned in the weak-lexicalist approach of early generative grammar, where even inflectional affixes constituted independent syntactic elements, generated in functional heads (e.g. Chomsky 1981:52). But in a strong-lexicalist approach (as adopted in minimalism, where inflected words are not created in syntax but introduced pre- or postsyntactically in fully inflected form), the question of paradigm structure resurfaces, and the idea that periphrasis is part of the inflectional paradigm can be entertained once more.

This is reflected in the survey article by Spencer and Popova (2015:202f), referring to recent work by Börjars, Vincent and Chapman (1997), Stump (2001), and Ackerman and Stump (2004), among others, in which we find versions of the original structuralist position again. As before, the central idea is that paradigms are structured by the

⁴ This is where Chomsky’s observation that verb movements do not seem to feed the postsyntactic component dealing with interpretation becomes relevant; I will not address this line of argumentation, but see Holmberg (2015) for discussion.

⁵ Robins says ‘syntactically comparable’, the context suggesting that he has syntactic category and syntactic dependency in mind rather than syntactic position.

intersection of features expressed in the forms (e.g. combinations of person, number, tense, voice, etc.). Each feature intersection defines a cell in the paradigm, which may be filled by a specific inflectional form, or, in its absence, by a periphrastic expression (Stump 2001:14).

This may be exemplified by Latin, where the features tense and voice intersect to yield the paradigm in Table 1. As is well-known, the cell where perfect tense and passive voice intersect cannot be filled by a synthetic form (forms in third person singular, from the verb *laudāre* ‘praise’).

TENSE	VOICE	ACTIVE	PASSIVE
PRESENT		laudat	laudātur
IMPERFECT		laudābat	laudābātur
PERFECT		laudāvit	laudātus est

Table 1

Another example is provided by Burushaski (Lorimer 1935:243f), where even a single tense paradigm can show a mix of analytic and periphrastic forms, involving the verb *ɛʈas* ‘to do, to make’ and a form of the copula (see also Chumakina 2013:9 and references cited there):

PERSON	NUMBER	SINGULAR	PLURAL
1.		ɛča ba	ɛča ba:n
2.		ɛča	ɛča:n
3. human masc.		ɛčaii	ɛča:n
3. human fem.		ɛču bo	ɛča:n
3. animate		ɛči bi	ɛčiɛ(n)
3. inanimate		ɛči bi:la / ɛči:la	ɛčitsʌn

Table 2

Burushaski present tense paradigm (Lorimer 1935:245)

If periphrastic expressions are not allowed to fill the relevant cells in the Latin and Burushaski paradigms, these paradigms would be randomly defective. Moreover, we would have to explain why syntax provides a periphrastic construction precisely there where these gaps in the paradigm happen to exist. Assuming that periphrasis is syntactic and inflectional morphology postsyntactic would lead us to the conclusion that periphrasis somehow causes the gaps in the paradigm observed in Tables 1-2 (i.e.

periphrasis blocks inflection), the converse of what we typically find in blocking relations (Kiparsky 2005).⁶

In Dutch, the relevant features are TENSE and some feature responsible for the relative tense interpretation (anteriority). We may follow Wiltschko (2014:75) in identifying this feature as POINT OF VIEW. Wiltschko calls the tense feature ANCHORING and locates both ANCHORING and POINT OF VIEW as particular areas in the clausal spine, comparable with TP (IP) and AspP in current minimalist analyses. Using the terminology introduced above, we may say that both TENSE and POINT OF VIEW (POV) are potential controllers that may share features with the verbal root.

The paradigm, then, is as in Table 3 (cf. (1)).

TENSE	POV	UNMARKED	ANTERIOR
PRESENT		wandelt	heeft gewandeld
PAST		wandelde	had gewandeld

Table 3

The ‘anterior present’ is what we described above as the relative past: it locates the event prior to the here and now. The ‘anterior past’, marked by the past tense on the auxiliary, locates the event prior to a reference point in the past (i.e. a past-shifted relative past). As can be seen, the periphrastic expressions fill the cells where the tense feature interacts with the anterior point of view feature.

A simple way to describe the situation in Dutch would be to say that the operators TENSE and POV control the corresponding features on the verb, assigning them certain values pointing to particular cells in the paradigm in Table 3. That some of these cells are filled by periphrastic expressions is not a matter of syntax, but of morphology.

2.2 Compositionality

There is a long tradition, going back to at least Benveniste (1965), that treats the Indo-European periphrastic perfect, exemplified here by Dutch, as non-compositional, in the sense that “the construction as a whole might be associated with morphosyntactic properties that do not arise from any of the component parts” (Spencer and Popova 2015:211). To Ackerman and Stump (2004), this is one of the diagnostic criteria for periphrasis (for which they refer to Mirra Gukhman).

As Benveniste (1965 [1974:184]) argues, the auxiliary-participle construction shows a clear division of labor (the auxiliary carrying inflection and the participle conveying lexical meaning), but the grammatical property of anteriority arises only as a function of the combination of the auxiliary and the participle.

In contrast, Kiparsky (2005:123) argues that the periphrastic (relative) past is compositionally derived from the meaning of its parts. This assumes that the past participle contributes the meaning PAST (i.e. anteriority), and the auxiliary (through its tense features) the location of the reference point relative to which the anteriority is to be interpreted.

⁶ Kiparsky solves this problem by assuming morphology before syntax.

I am not convinced that the participle denotes the past, as Kiparsky contends. In many languages, the same participle appears in the passive (with a different auxiliary), without a hint of anteriority (cf. Wackernagel 1920:288-289). Moreover, Kiparsky's suggestion that the periphrastic tense is compositional fails to specify the contribution made by the (possessive) auxiliary, since the reference point relative to which the anteriority is to be interpreted is not derived from the presence and nature of the auxiliary, but from the tense feature of the clause (spelled out by the auxiliary's tense morphology).

More seriously, we can show that any compositionality that may have existed originally in the formation of the periphrastic past is very often lost as the periphrastic past became enshrined in the temporal/aspectual system of the language. As a result, closely related languages like Dutch, German and English show subtle differences in the grammatical properties of the auxiliary-participle combination.

In English, unlike Dutch, the 'perfect time span' in which the event is situated is not fully anterior, running up to and including the here and now (Iatridou, Anagnostopoulou and Izvorski 2001). This can be seen from the incompatibility of the periphrastic past ('perfect') with time adverbials locating the event squarely in the past, like *yesterday* (cf. Klein 1992, Zwart 2008):

- (4) a. John (*has) read the book yesterday
 b. Jan heeft het boek gisteren ge-lez-en Dutch
 John AUX.3SG the book yesterday GE-read-PART
 'John read the book yesterday.'

It is not so clear where this subtle but high-impact distinction between Dutch and English participles originates, or what this instance of variation tells us about the core meaning of the past participle.

German is like Dutch in this respect, but in large parts of the German speaking area, the periphrastic past tense has completely replaced the simple past, so that it can now be used to express cotemporaneity with a reference point in the past ('Präteritumschwund', cf. Abraham and Conradie 2001). Compare German (5) with Dutch (3c):

- (5) Als ich herein kam hat er ge-schlaf-en German
 when I in come:PAST.SG AUX.3SG he GE-sleep-PART
 'When I came in he was asleep.'

This additional shift in interpretation indicates that anteriority is not an inherent or stable property of the periphrastic tense, casting doubt on the suggestion that the particular semantics of the Dutch relative past derive compositionally from its morphological component parts.

Moreover, as already observed for English in Hoffman (1966:8), the forced anteriority reading of the periphrastic tense disappears in Dutch nonfinite clauses (Zwart 2014). This can be seen in (6), applying the past tense diagnostics of (3).

(6) Hij beweert-t ...
 he claim-3SG
 'He claims ...

a. ... te slap-en
 INF sleep-INF
 ... to be asleep.'

b. ... te heb-ben ge-slap-en toen ik binnen kwam
 INF AUX-INF GE-sleep-PART when I in come:PAST.SG
 ... to have been asleep when I came in.'

c. * ... te slap-en toen ik binnen kwam
 INF sleep-INF when I in come:PAST.SG

In (6b), making the reference point in the past explicit (by *toen ik binnen kwam* 'when I came in') forces a shift from the unmarked infinitive *te slapen* 'to sleep' to an infinitive marked for past tense *te hebben geslapen* 'to have been asleep'. But since Dutch lacks a synthetic past tense infinitive, once again the periphrastic expression appears. If the periphrastic past's anteriority reading were compositional, (6b) should have a forced anteriority reading as well, contrary to fact.⁷

We can now supplement Table 3 with its nonfinite counterpart in Table 4:

TENSE	POV	UNMARKED	ANTERIOR
PRESENT		te wandelen	te hebben gewandeld
PAST		te hebben gewandeld	te hebben gewandeld

Table 4, nonfinite paradigm

Like in southern German, the periphrastic expression encroaches on the synthetic form, apparently ignoring whatever compositionality (if any) gave rise to its formation in the first place.

The non-compositionality of the periphrastic past in Dutch is consistent with the idea that the periphrastic past is a morphological rather than a syntactic creation.

2.3 Auxiliation

The development of the periphrastic past tense of the type discussed here is a textbook example of the process of grammaticalization (e.g. Hopper and Traugott 1993:57, Harris and Campbell 1995:182f, Kuteva 2001:40f). In the course of this process, a lexical verb of possession becomes an auxiliary, and what was initially a secondary predicate is reanalysed as a participial main verb. A detailed discussion of this development is

⁷ The infinitival periphrastic construction can also be used to express present and past anteriority.

beyond the scope of this article, so we will assume our understanding of it to be by and large correct, noting the important refinements by Benveniste (1968:86f).

What is striking is that the same development took place in many languages, and that its distribution can certainly not be explained as contact-induced propagation (Vendryes 1937:87-88). Moreover, what we find repeatedly is a push chain effect, shaking up the temporal/aspectual system of the language. Thus, Benveniste (1968:88) notes that the development of the periphrastic perfect in Latin leads to a reinterpretation of the original synthetic perfect as an aorist. In other languages, the synthetic perfect has disappeared completely (Vendryes 1937:90, Meillet 1921:149f).

What these changes seem to indicate is that periphrasis and synthesis are competing for the same turf. This follows naturally if periphrasis is morphological, but is somewhat unexpected if both processes, periphrasis and synthesis, are in the different leagues of syntax and morphology.

3. Division of labor between syntax and morphology in periphrasis

Periphrasis is analyzed as a mix of morphology and syntax in Brown et al. (2012), with the aim of identifying a set of criteria to be employed for the proper characterization of apparent periphrastic phenomena in (ideally) any language. Using these criteria, we may decide where the Dutch periphrastic tense may be located in this morphosyntactic spectrum.

Criteria favoring morphological character are (i) obligatoriness: the inevitable need to use a particular form in a particular morphosyntactic environment, (ii) expression of contextual rather than inherent features, (iii) the creation of a word *form* rather than a (new) lexeme, and (iv) the expression of a paradigmatic opposition. All these criteria apply to the periphrastic past tense in Dutch: it (i) must be used to express relative past, (ii) expresses tense, a clausal feature, (iii) creates a (periphrastic) form of a word rather than a new lexeme, which (iv) enters into paradigmatic oppositions (see Tables 3 and 4).

A fifth criterium listed by Brown et al (2012), that of (v) being complex, applies to both morphological and syntactic formations, and indeed to the Dutch periphrastic past as well.

Criteria favoring syntactic character are (vi) word order flexibility and (vii) allowing inflected subparts. These both apply to the Dutch periphrastic tense: the auxiliary (vi) need not be adjacent to the participle, and appears on either side of the participle (see below), and (vii) carries the clausal tense and agreement inflections. There is, however, a problem with these two criteria, as they serve to demarcate syntax from word formation, but not (necessarily) syntax from the formation of periphrasis. Being composed of more than one word is in the very nature of periphrasis, and it is not clear what would block the component words from undergoing processes of postsyntactic movement or inflection marking.

It seems, then, that the set of criteria identified in Brown et al (2012) overwhelmingly points to periphrasis being morphological.

This is not to deny that periphrasis is complex and structured. A useful starting point is to assume that anything complex and structured is derived by Merge, i.e. syntactically. But many complex and structured items are clearly morphological, such as compounds and the products of derivational morphology. Evidently, the morphological inventory

contains elements that are produced syntactically (see Ackema and Neeleman 2004), just like lexical items (roots) can be produced syntactically (Hale and Keyser 2002).

However, when we say that a periphrastic item $[\alpha\beta]$ is syntactic, as opposed to morphological, we mean that α and β , along with a range of other elements $\{\gamma, \dots, \zeta\}$, are members of a single Numeration feeding a single derivation that yields the sentence composed of α , β , γ , etc. and ζ . In other words, there is no separate syntactic subderivation in which $[\alpha\beta]$ is created, either before syntax (feeding the Numeration) or after syntax (feeding the morphological paradigms), but the periphrastic expression is created ‘on the fly’, during the derivation that yields the clause in which it appears. When I deny the syntactic status of periphrasis, it is in this particular sense, in which levels of derivation that should be kept apart have been mixed.

This approach to the division of labor between syntax and morphology is close to that of Börjars, Vincent and Chapman (1997), which drew a sharp critique in Embick (2000:223-224). Embick’s point seems to be that if cells in the morphological paradigm can be filled by phrases created in a separate derivation, no predictions can be made about the nature and structure of those phrases. His own proposal holds that both the synthetic and the periphrastic perfect of Latin are created in clausal syntax (thus mixing the levels of syntax and word formation in the tradition of weak lexicalism and Distributed Morphology; cf. Halle and Marantz 1993, Halle 1997). It seems to me that the interesting part of this analysis can be made compatible with the Börjars et al. approach quite easily, whereas the part involving the syntactic derivation is considerably less compelling, as shown by Kiparsky (2005:129f).⁸

4. Further arguments

So far we have seen that there are reasons to consider the periphrastic past as a morphological phenomenon, occupying a cell in the morphological paradigm. Assuming postsyntactic morphology, this entails that the auxiliary is only introduced after the narrow syntactic derivation has run its course.

It is important to note that this conclusion does not necessarily carry over to the other types of verb clusters in Dutch, involving modal auxiliaries (7a) or lexical verbs selecting infinitival complements (7b).

⁸ Embick (2000) argues that the synthetic and the periphrastic perfect in Latin involve the same sets of features, distributed across identical syntactic structures, and that word formation is a function of syntactic movement, which is blocked in the periphrastic present by an opacity factor. The blocking is stipulated, but let us assume it to be correct. As far as I can tell, the generalizations of the analysis are not lost if the syntactic structure in fact describes a subderivation feeding into the morphological paradigm, separate from the sentential syntactic derivation. Since the elements in the morphological paradigm serve to express the features in the (sentential) syntactic terminals, some parallelism between the sentential syntactic and morpho-syntactic derivations is to be expected.

This also answers Embick’s objection that in a Börjars et al type approach, anything goes. Clearly, for a phrase to obtain a position in an inflectional paradigm, some commonality in morphosyntactic features has to exist, which arguably requires some structural parallelism between the phrasal and inflectional elements as well (perhaps along the lines of Williams’ [2003] *shape conservation*). Embick’s analysis goes a long way towards bringing such parallelisms to light, strengthening rather than weakening the lexicalist approach.

- (7) a. *modal auxiliaries*
 ... dat Tasman het Zuidland wil ontdek-ken
 COMP Tasman DEF.NTR South.Land AUX:VOLITION.SG discover-INF
 ‘... that Tasman wants to discover the South Land.’
- b. *infinitival complements*
 ... dat Tasman het probeer-t te ontdek-ken
 COMP Tasman 3SG.NTR try-3SG INF discover-INF
 ‘... that Tasman is trying to discover it.’

Clusters with modal auxiliaries or infinitival complement taking verbs are straightforwardly compositional and cannot be analyzed as occupying a cell in an otherwise inflectional morphological paradigm. These clusters, therefore, must be thought of as being created either in or before narrow syntax (i.e. in a separate derivation feeding the Numeration rather than the morphological paradigms).

With this out of the way, we can briefly discuss a number of additional observations supporting the morphological (postsyntactic) nature of the periphrastic past in Dutch.

4.1 Variability

The verb cluster expressing the periphrastic past (i.e. consisting of a temporal auxiliary *hebben* ‘have’ or *zijn* ‘be’ and a past participle) shows a remarkable variability in the order of its elements, both across dialects and within the standard language. Marking the auxiliary 1 and the participle 2, both ascending (1-2, auxiliary—participle) and descending (2-1, participle—auxiliary) orders occur. This is different from the clusters featuring modal auxiliaries and infinitive-taking lexical verbs, which are predominantly ascending (1-2) across dialects and almost invariably ascending (1-2) in the standard language (see Stroop 1970, Zwart 1996, and more recently Barbiers et al 2008:14-25).

Deriving the variable orders in the cluster syntactically poses a range of problems, giving rise to a diversity of analyses too wide to discuss here (but see Wurmbrand 2005). Suffice it to say that existing proposals often must resort to ad hoc devices, such as optional movement, rightward movement, movement of intermediate projections, verb incorporation (‘verb raising’) and excorporation, reanalysis, and roll-up movement. None of this is necessary if the periphrastic past is a product of postsyntactic morphology.

More particularly, the fact that the verb cluster in the periphrastic past behaves differently from the verb clusters headed by modal auxiliaries and lexical verbs taking infinitives can now be ascribed to the circumstance that the periphrastic past is created postsyntactically, and the other verb clusters are not.

To some extent, the problem of how to account for variability in the order of the auxiliary and the participle remains, but a large part of that problem, namely to describe the phenomena in terms of syntactic processes, has disappeared. And perhaps we may even ascribe the variation in linear order to the externalization process (‘spell out’), reducing the problem of cluster generation simply to the merger of an auxiliary and a participle in a separate derivation feeding morphological paradigms.

4.2 The IPP-effect

In three-verb clusters, where the highest verb is a temporal auxiliary, the second verb is realized as an infinitive instead of as a past participle (the *Infinitivus-pro-participio* or IPP effect; Lange 1981, Zwart 2007, Schallert 2014, among many others):

- (8) a. *two-verb cluster, auxiliary selects participle*
 heeft { ge-wil-d / *wil-len }
 AUX:3SG GE-want-PART want-INF
 ‘wanted’
- b. *three-verb cluster, auxiliary selects infinitive*
 heeft { *ge-wil-d / wil-len } ontdek-ken
 AUX:3SG GE-want-PART want-INF discover-INF
 ‘wanted to discover’

While much about the IPP-effect remains unclear, the present approach suggests a new angle. Recall that we assume that the periphrastic past is created postsyntactically: in syntax, (8a) is just the verb *willen* ‘want’ with relative past (present anterior) features. In (8b), however, the syntactic element to be replaced in morphology is not a single verb but a cluster *willen ontdekken* ‘want discover’. The generalization, then, would be as in (9):⁹

(9) *IPP-effect*

The relative past of *x* is marked with *ge-* only if *x* is not a verb cluster.

This is a morphological generalization, referring to the inventory of forms and the processes generating them, and not to syntax.

One generalization about the IPP-effect follows immediately, namely the generalization that the IPP-effect is absent in dialects not marking the relative past with *ge-* (Hoeksema 1980, Lange 1981). More problematic, however, is the generalization that the IPP-effect is sensitive to linear order, clusters with strictly descending orders (3-2-1) typically not showing the IPP-effect (though exceptions do exist, cf. Zwart 2007:78f). The following example is from Achterhoeks Dutch (Blom and Hoekstra 1996:76).

- (10) ... dat ik schriev-m e-wil-d had (Achterhoeks Dutch)
 COMP I write-INF GE-want-PART AUX:PAST.SG
 ‘... that I had wanted to write.’

Further refinement of (9), then, would still be needed, but it is not clear that this would put the entire approach in any kind of jeopardy. One possibility would be that in (10), *schrievm* ‘write’ and *willn* ‘want’ are separate terminals in syntax (so there is no

⁹ I am assuming that the replacement of the participial ending by the infinitival ending is a secondary effect, see Zwart (2007:85) following Paul (1920:128).

presyntactic cluster formation), with only *willn* marked with the present anterior features triggering periphrastic tense formation in morphology.¹⁰

4.3 Mixed cluster orders

It has been observed that not all mixed cluster orders (*1-3-2*, *2-1-3*, *2-3-1*, *3-1-2*) are equally frequent across Continental West Germanic dialects, though all are attested (see Zwart 2007 and Salzmann 2016 on the rare *2-1-3* type). The question is whether this is what we expect to find if periphrastic tense formation is postsyntactic.

If the temporal auxiliary (*have* or *be*) is the highest verb in the cluster, there are two possibilities. First, the *2-3* verbs form a cluster, created presyntactically; in that case the cluster is transferred as a single terminal after completion of the narrow syntactic derivation, which is turned into a three-verb cluster in morphology. The IPP-effect (9) applies, and we expect the mixed orders *1-3-2* and *2-3-1* to occur (in addition to the consistent ascending *1-2-3* and descending *3-2-1* orders). The other possibility, hinted at in section 4.2, is that the *2* and *3* verbs are independent elements in the syntactic derivation, only one of which (the *2* verb) is turned into a periphrastic past in morphology. The IPP-effect does not apply, as the relevant verb is not a cluster, and we expect the orders *2-1-3* and *3-1-2* to occur (*2-1/1-2* being the periphrastic element produced by morphology).

This is indeed what we find. Interestingly, all attested *2-1-3* cases show no IPP-effect (Zwart 2007, Salzmann 2016). An example is given in (11) from Luxemburgish (Bruch 1973:95).

- (11) ... ob-s de hollänesch ge-leier-t hues schwätz-en
 COMP:INT-2SG you Dutch GE-learn-PART AUX:2SG speak-INF
 ‘... whether you learned to speak Dutch.’ Luxemburgish

On the other hand, the *3-1-2* order does show the IPP-effect (example from Austrian Bavarian, Patocka 1997:278; the IPP-verb is *soin*, the modal infinitive):

- (12) ... da ma wås lean-a hett-n soi-n
 COMP we something learn-INF AUX:PAST-PL MOD-INF
 ‘... that we should have learned something.’ Austrian Bavarian

On our approach, this can only be explained if the position of the *3*-verb *leana* ‘learn’ is due to a postsyntactic leftward shift process, breaking up the cluster *soin leana*.

If the temporal auxiliary is the number *2* verb, we again have to consider the two possibilities of presyntactic cluster formation, yielding a single terminal at the end of the narrow syntactic derivation, and the alternative derivation in which both verbs are independent syntactic elements. Let us assume that the number *1* verb is a modal auxiliary selecting an infinitive (ultimately the number *3* verb). Then assuming presyntactic cluster formation, the periphrastic past can only occur if the infinitive has an independent tense feature (present anterior), not a straightforward possibility, but let us proceed. This yields a cluster *2-3* after syntax, which we predict to have to stay

¹⁰ The IPP-variant is optional in (10). This variant would then differ in involving presyntactic cluster formation, so that (9) applies.

together, barring the postsyntactic leftward shift of the number 3 verb needed for (12). This gives us 1-3-2, 2-3-1 and 3-1-2 (after leftward shift), but not 2-1-3. If the modal and the infinitive are both independently present in syntax, and the infinitive gets an independent tense feature (present anterior), the result is the same.

It is interesting, then, to note that all the 2-1-3 orders I have seen in dialect descriptions and in the theoretical literature involve a number 1 temporal auxiliary, none involving a number 1 modal auxiliary and a number 2 temporal auxiliary (see also Schallert 2014:271). This follows from the analysis contemplated here, where the periphrastic past is produced in postsyntactic morphology, assuming that the cluster thus created can only be broken up by postsyntactic leftward shift of the participle (itself a generalization in need of explanation).¹¹

4.4 Auxiliary selection

A well-known property of the periphrastic past is that the nature of the temporal auxiliary may vary, with verbs ‘selecting’ as the auxiliary to be used either a copula (*be*, Dutch *zijn*) or a possessive verb (*have*, Dutch *hebben*). Basically, auxiliary *be* is selected by unaccusative and passive verbs, and *have* is selected by active transitive and unergative verbs. Some verbs may select both *have* and *be*, but as Hoekstra (1984) has shown, the variation is not random, as these verbs can be construed in different ways, featuring either unaccusative or unergative syntax.

I am assuming there that the discussion in Hoekstra (1999) is essentially correct, showing that auxiliary selection is not a function of a lexical mutativity feature (Kern 1912), but of syntactic structure. But not assuming postsyntactic morphology, Hoekstra describes the auxiliary *have* as being created in syntax through movement of a functional head specific to transitive and unergative structures into Infl (see Kayne 1993 for a related proposal).

Assuming postsyntactic morphology, this analysis can be simplified in that we may adopt the syntactic structures without the hypothesized movements. The more complex structure associated with transitivity (including unergative constructions) may involve controllers imparting additional features on the verb, to be spelled out in morphology.

The advantage of this approach would be that it leaves room for morphological idiosyncrasies, which we know are quite frequent in this domain. For example, languages featuring the periphrastic past do not always show the same auxiliary selection pattern, as is immediately clear from the example of English (using *have* systematically). Realization of the auxiliary, then, cannot be an automatic function of syntactic structure.

This is nowhere more apparent than in the selection of the auxiliary for the copular verb itself. The syntactic analysis of Hoekstra (1999) here predicts the auxiliary to have to be *be*, as it is Dutch, but many languages employ *have* instead. The crosslinguistic pattern has been studied in Postma (1993), who derives the surprising generalization that selection of the auxiliary *be* in this domain is determined by the presence of

¹¹ Three-verb clusters in which the number 1 verb is not an auxiliary show the same pattern as the three-verb clusters with a modal auxiliary in the number 1 position, with 3-1-2 allowed but 2-1-3 excluded, and I would suggest an explanation along similar lines, except that the pattern also applies where the number 2 verb is not a temporal but a modal auxiliary. These patterns, then, do not bear directly on the proposed analysis of periphrastic tense.

suppletive morphology in the participial form of the copula. This is exemplified in Table 5 for the closely related languages Dutch and Frisian.¹²

LANGUAGE	COPULA (INFINITIVE)	PERIPHRASTIC TENSE	AUXILIARY	SUPPLETION
Dutch	zij-n	is ge- wees-t	<i>be</i>	+
Frisian	wêz-e	ha wes-t	<i>have</i>	–

Table 5

Postma proposes a syntactic analysis of this generalization, which space does not permit me to discuss more fully here. But if suppletion, a hallmark of inflectional morphology, determines auxiliary selection, then auxiliary selection must be morphological too. And if morphology is postsyntactic, as we have been assuming throughout, then auxiliary selection must be postsyntactic, too.

5. Conclusion

In this article I have argued that if morphology is postsyntactic, as in current minimalism, the periphrastic tense must be thought of as a product of morphology rather than syntax.

We have seen that the periphrastic past in Dutch occupies a cell in the verbal paradigm, as illustrated in Table 3 for the finite paradigm and in Table 4 for the nonfinite paradigm. The ‘meaning’ of the periphrastic tense is not compositionally derived from its component parts (following Benveniste 1965, *pace* Kiparsky 2005), witness the shifts in interpretation that the periphrastic tense displays across languages and dialects, sometimes even replacing the simple past, as in Southern German dialects and in nonfinite contexts more generally. While the auxiliation process giving rise to the periphrastic tense has been described as syntactic reanalysis, the fact that the periphrastic tense effectuates a reorganization of a language’s temporal/aspectual system shows that the process is really morphological.

We have applied the diagnostic criteria of Brown et al (2012) to show that the periphrastic tense of Dutch is a morphological, rather than a syntactic phenomenon. This is not to deny that the fine structure of the periphrastic tense formation may parallel the structure of the clause in which the periphrastic tense appears, as observed by Embick (2000), but rather than taking the (imperfect) parallel as evidence for a syntactic derivation of the periphrastic tense, the similarity must be ascribed to the need for the products of morphology to externalize the features accrued in the syntactic derivation.

We have shown that taking this perspective on the periphrastic tense casts new light on several curious aspects of Dutch verbal syntax, including the IPP-effect, generalizations about the order of elements in the verb clusters, and auxiliary selection.

¹² Postma bases his generalization on nineteen Indo-European languages.

The upshot of the discussion is this. If the periphrastic tense is a product of postsyntactic morphology, the auxiliary that we observe in the periphrastic tense does not exist in syntax. Yet the auxiliary, when finite, invariably undergoes verb movement ('verb-second') to the position to the immediate right of the first clausal constituent in Dutch main clauses. This movement, then, cannot take place in narrow syntax, but must be postsyntactic. Since all finite verbs in main clauses are subject to the same linearization restriction, all of verb-second must be postsyntactic. And since verb-second represents a core case of head movement, a case can be made for the postsyntactic nature of head movement more generally.

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