

# The uses of the present perfect in a binary-tense approach: a diachronic perspective

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**Abstract:** This article adopts the controversial position that the present perfect has a unique meaning, which will be phrased in terms of binary-tense theory, as originally formulated in Te Winkel (1866) and formalized in Verkuyl (2008) and Broekhuis and Verkuyl (2014). The article investigates the main uses of present-perfect constructions distinguished in McCawley (1971/1981) and claims that the existential reading constitutes the core meaning of the present perfect, from which the universal-perfect and the perfect-of-result readings can be derived by pragmatic means. The analysis will be supported by showing that the non-default readings have been made possible by two later diachronic stages in the development of the Germanic perfect, as distinguished in Kern (1912). The data used for illustration in this paper are mainly taken from Dutch but the conclusions of our discussion can at least partly be transferred to the other Germanic languages, with the notable exception of English.

**Keywords:** binary tense theory, present perfect, inner aspect, language change

## 1 Introduction

This article adopts the controversial position that the present perfect has a unique meaning, which will be phrased in terms of binary-tense theory, as originally formulated in Te Winkel (1866) and formalized by Verkuyl (2008; in progress), and investigates how the various uses of present-perfect constructions can be derived from this meaning. McCawley (1971) and many others since distinguish four main uses, which are given in (1). The terminology found in the literature is somewhat confusing: the terms introduced in (1a-b) are taken directly from McCawley, while those in (1c-d) are taken from Comrie (1981), but one should be aware that alternative names and uses for these terms can be encountered in the literature; Comrie, for instance, uses the notion experiential perfect for (1b), while Iatridou et al. (2001) use the notion existential perfect as a cover term for the uses in (1b-d). The descriptions of the uses given in (1), in which *eventuality* refers to the situation described by the propositional content of the clause, are based on the three works cited above but will be replaced later in this paper.

- (1) The four major uses of the present perfect:
  - a. **Universal perfect** ( $\forall$ -perfect): the eventuality holds throughout some time interval beginning at a certain point preceding speech time until (at least) speech time: *John has lived in Berlin since 1999* implies that John still lives in Berlin at speech time.
  - b. **Existential perfect** ( $\exists$ -perfect): the eventuality has occurred at least once before speech time: *John has read this book (twice)*; *John has lived in Berlin*.

- c. **Perfect of result** (R-perfect): the eventuality has led to a state transition of the theme argument and the result state holds at speech time: *John has arrived in New York* implies that John is in New York at speech time.
- d. **Perfect of recent past** (Hot news): the eventuality has occurred (shortly) before speech time and the addressee is not aware of that fact yet: *John has just left*.

The claim defended here that the present perfect has a unique meaning is controversial; see Mittwoch (1988) and Iatridou et al. (1993: §6.3) for arguments in favor of the claim that at least the distinction between the  $\forall$ -perfect and the  $\exists$ -perfect reading is semantic in nature. However, it is widely recognized that the various uses rely heavily on contextual (linguistic or extra-linguistic) information, which suggests that we are not dealing with different *meanings* but with different *interpretations* of the present perfect. Huddleston and Pullum (2002: 141), for instance, claim that their non-continuative reading of the present perfect (which includes the  $\exists$ -perfect reading) can be regarded as the default one, as the continuative (i.e.  $\forall$ -perfect) reading requires the presence of specific adverbials such as *since 1999* or other contextual clues (but see fn. 3 for a different view).

- (2) a. John has lived in Berlin. [default;  $\exists$ -perfect]
- b. John has lived in Berlin *since 1999*. [marked;  $\forall$ -perfect]

This article will argue that not only the  $\forall$ -perfect reading but also the R-perfect reading is a more special (non-default) reading, where the difference between the two is related to aspectual properties of the predicate of the construction. There is no need to do the same for the perfect of recent past, as McCawley (1981) already argued for a pragmatic account for this reading since its availability depends on the knowledge state of the addressee: the information provided by the utterance must be new (which can be highlighted by adverbs of recency such as *just*) and unexpected. The focus of this paper will therefore be on the three readings in (1a-c); the reading in (1d) will only be briefly addressed in the conclusion of this article.

The claim that the  $\exists$ -perfect reading is the default reading of the present perfect goes against the currently prevailing view that the central meaning aspect of the present perfect is one of “current relevance”. According to this view, sentences in the present perfect describe eventualities that are relevant at speech time in that they or their results still hold at that specific point in time; see Ritz (2012) for a review of various versions of this claim. This view amounts to saying that the  $\forall$ -perfect and the R-perfect are the defaults, which may in turn lead to treating the  $\exists$ -perfect as being semantically different (as was already mentioned above). One reason for not adopting this claim about the meaning of the present perfect is that it is highly Anglocentric: although it nicely accounts for the fact that in English it is normally impossible to modify present-perfect constructions by means of a temporal adverb like *yesterday* (the so-called present-perfect puzzle discussed in Klein 1992), it leaves unexplained that this phenomenon is not found in languages like Dutch or German. This is illustrated by the contrast between the English examples in (3a,b) and their Dutch translations in the corresponding primed examples.<sup>1</sup>

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<sup>1</sup> The primeless examples are taken from, respectively, Klein (1992) and an earlier version of that paper ([pure.mpg.de/rest/items/item\\_68469\\_6/component/file\\_1076550/content](http://pure.mpg.de/rest/items/item_68469_6/component/file_1076550/content)).

This Anglocentric bias has led to claims that languages like Dutch and German have lost the central meaning aspect of the present perfect due to grammaticalization; cf. Dahl and Hedlinn (2000: 391).

- (3) a. \*Chris has left New York yesterday.  
      a'. Chris is gisteren uit New York vertrokken.  
           Chris is yesterday from New York left  
      b. \*Chris has left his wife last year.  
      b'. Chris heeft verleden jaar zijn vrouw verlaten.  
           Chris has last year his wife left

Note, however, that the Dutch examples in (3) do readily allow the R-perfect reading, as (3a') would normally be taken to imply that Chris is not in New York and (3b') that Chris and his wife live separately at speech time. Dutch can therefore not be said to have lost the presumed central meaning aspect of current relevance. The difference with English is just that these implications can readily be canceled (and in some cases do not even arise): *Chris is gisteren uit NY vertrokken maar onmiddellijk weer teruggekeerd omdat hij ziek werd* 'Chris left NY yesterday, but has returned immediately because he became ill'; *Chris heeft verleden jaar zijn vrouw verlaten, maar is nu weer bij haar terug* 'Chris left his wife last year, but is living with her again now'.

The discussion above shows that the view that the central meaning aspect of the present perfect is about "current relevance" is not satisfactory for languages such as Dutch. The alternative view adopted here is that the central meaning aspect of all perfect tenses is "completion of the eventuality".<sup>2</sup> As said earlier, my point of departure will be that the  $\exists$ -perfect reading is the default reading of the present perfect, as this reading does not impose any restrictions on the aspectual properties of the predicates used; cf. Iatridou et al. (1993: §6.2.2). The absence of such restrictions is clearest in languages like Dutch that do not exhibit the present-perfect puzzle: the examples in (4) would normally be interpreted as  $\exists$ -perfects, that is, with the eventualities referred to by these sentences preceding speech time. Example (4a) with the mutative (or telic) predicate *build a sandcastle* would be perfectly fine when the sandcastle turns out to be demolished by the flood and (4b) with the non-mutative (or atelic) predicate *live in Berlin* does not entail that Jan is still living in Berlin at speech time.<sup>3</sup>

<sup>2</sup> I will occasionally make a further terminological distinction between *termination* and *complete actualization*: the first notion will be used in the description of the perfect of non-mutative eventualities (without an inherent terminal point as with *to live in NY* or *to sleep*) and the latter in the description of the perfect of mutative eventualities (with an inherent terminal point that triggers a state transition of the theme argument as with *to kill* or *to die*). This means that *completion* is a cover term used when Aktionsart is not at stake.

<sup>3</sup> Mittwoch (1988: 209) claims that  $\exists$ -perfects arise mainly with events (= achievements and accomplishments), as states tend to receive the  $\forall$ -perfect reading. This statement is again clearly Anglocentric in nature: English present-perfect constructions have a bias towards the "current relevance" interpretation. I refer the reader to the introduction to Section 2 for reasons for the premise that English is the odd one out among the Germanic languages when it comes to the interpretation of tenses, contrary to what is occasionally claimed in the literature on English; see the sentence immediately preceding example (3).

- (4) a. Marie heeft een zandkasteel gebouwd (maar het nu is weggespoeld).  
 Marie has a sandcastle built but it now is away-washed  
 ‘Marie built a sandcastle (but it has washed away now).’  
 b. Jan heeft in Berlijn gewoond (maar woont nu in London).  
 Jan has in Berlin lived but lives now in London  
 ‘Jan lived in Berlin (but he is living in London now).’

This is crucially different for the  $\forall$ -perfect and the R-perfect reading:  $\forall$ -perfects arise only when we are referring to non-mutative eventualities, while R-perfects arise only when we are referring to mutative eventualities. This is clear for the English present-perfect examples in (5): example (5a) with the non-mutative predicate *live in Berlin*, allows an  $\forall$ -perfect but not an R-perfect reading, while (5b) with the mutative predicate *build a sandcastle* allows an R-perfect but not an  $\forall$ -perfect reading; I refer to, e.g. Iatridou et al. (2001: §6.6.2) and Huddleston and Pullum (2002: 142; 145) for more examples and discussion.

- (5) a. John has lived in Berlin.  
 b. Mary has built a sandcastle.

Note in passing that it is reported that the  $\forall$ -perfect reading does not occur in German (Comrie 1981: 60), but this is certainly not true for Dutch: example (6a) can receive the same interpretation as English (5a), as is clear from the fact that it can be continued with ... *en wil er ook graag blijven wonen* ‘...and likes to remain living there’, although this reading is less prominent due to the fact that it alternates with the simple-present construction in (6b).<sup>4</sup>

- (6) a. Jan heeft sinds 1999 in Berlijn gewoond.  
 Jan has since 1999 in Berlin lived  
 b. Jan woont sinds 1999 in Berlijn.  
 Jan lives since 1999 in Berlin

The discussion so far suggests that we cannot account for the present-perfect readings distinguished in (1) by referring to the “completion” meaning of the present perfect only; they should instead result from this meaning in interaction with the Aktionsart of the eventuality. Section 2 will take the characterization of the present perfect given by binary-tense theory as its point of departure and will show that this theory is ideally suited for distinguishing the  $\exists$ -perfect and the  $\forall$ -perfect reading. Because binary-tense theory may be less familiar, this section will start with introducing the gist of the proposal in an informal way.

Section 3 will consider the distinction between the  $\forall$ -perfect and the R-perfect reading from a diachronic perspective. I will adopt the description of the diachronic

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<sup>4</sup> German speakers provide varying judgments on the use of the German counterpart of (6a) on the intended reading, ranging from severely degraded to perfectly normal; see also the German example *Ich habe dich schon immer geliebt* ‘I have always loved you’, provided by Rothstein (2008) as a clear-cut example of the  $\forall$ -perfect. That some German speakers do not readily allow the  $\forall$ -perfect reading for present-perfect constructions may be related to the fact that the German present perfect seems to be in the process of replacing the simple past.

development of the perfect tense given by Kern (1912), who relies heavily on earlier work by Paul (1902). This development can be summarized as in (7); cf. Broekhuis (2021).

- (7) a. Stage I: The rise of (state-denoting) adjectival participles with the verbs HAVE and BE in, respectively, copular-like and perfect passive-like constructions.  
 b. Stage II: Reanalysis of adjectival participles as (process-denoting) verbal participles, which gives rise to HAVE perfects with transitive verbs and to BE perfects with mutative intransitive verbs.  
 c. Stage III: Spread of HAVE perfects to constructions with non-mutative intransitive verbs.

It will be shown that Kern's description implies that the distinction between the  $\exists$ -perfect and the R-perfect reading is of an older date than that between the  $\exists$ -perfect and the  $\forall$ -perfect reading: the former arose during the transition from Stage I to Stage II, while the latter became possible during the transition of Stage II to Stage III. The diachronic development of the perfect in (7) in tandem with the earlier claim that the  $\exists$ -perfect reading is the default reading of the present perfect also sheds some light on the fact discussed earlier that while the R-perfect and the  $\forall$ -perfect reading are only possible with, respectively, mutative and non-mutative verbs, such a restriction does not hold for the  $\exists$ -perfect reading.

## 2 Binary-tense theory and the $\forall$ -perfect reading

Although the uses of the present perfect in (1a-c) cannot be accounted for by means of a direct appeal to the unique meaning of the present perfect (i.e. completion), this meaning should allow the various interpretations to arise. This article aims at showing that the semantic characterization of the present perfect given by binary-tense theory is ideally suited for distinguishing these interpretations; this section will show this for the distinction between the  $\exists$ -perfect and the  $\forall$ -perfect reading. Because binary-tense theory may be less familiar to some readers, I will start by introducing the gist of the proposal in an informal way, with a special focus on those features that are relevant for our research question. Subsection 2.1 will start with a brief comparison of some central aspects of binary-tense theory and the currently dominant approaches to tense theory based on Reichenbach (1947). The comparison is given only for the limited purpose of highlighting a number of differences between the two approaches crucial for our present discussion; for a more detailed discussion, I refer the reader to Verkuyl (2008; in progress). Sections 2.2 and 2.3 will provide an informal discussion of the tenses defined by the binary-tense approach in the version proposed in Broekhuis and Verkuyl (2014); this will show that tense is of a completely different nature than normally assumed in the Reichenbachian approaches in that it is *not* primarily used for locating an eventuality on the time axis (e.g. relative to the speech time). Section 2.4, finally, will show how the distinction between the  $\exists$ -perfect and the  $\forall$ -perfect reading can be derived within the binary-tense approach.

Binary-tense theory will mainly be illustrated by means of Dutch examples, although the conclusions of our discussion can at least partly be transferred to most of the other Germanic languages. The transfer is not always complete, as the development of the perfect tenses in (7) sometimes has been followed by other changes in some of the other Germanic languages. German, for instance, is less optimal for illustration given that

the German present perfect is nowadays often used in contexts where Dutch still uses the simple past (see also fn. 4); this more recent development in German is not part of the current investigation.<sup>5</sup> It should further be noted that English did not (fully) follow the diachronic development of the perfect tense outlined in (7) above, which is still visible in the fact that contemporary English fails to distinguish between HAVE and BE perfects; BE perfects either disappeared at a very early stage in the development or may never have arisen at all (McFadden and Alexiadou 2010). In fact, English seems to be the exception among the Germanic languages more generally when it comes to the use and interpretation of the various tense forms. For example, it uses a special form for referring to ongoing dynamic eventualities (BE + gerund as in *I am reading*), a form missing in the other Germanic languages, and it has a certain bias toward “current relevance” readings of the present perfect (leading to issues related to the present-perfect puzzle). In short, the English tense system diverges in more than one way from what is found in the other Germanic languages; see Verkuyl (in progress) for a more detailed discussion of this issue. This is the main reason for not assuming the Anglocentric position normally adopted in discussing the present perfect in the literature.

### 2.1 *The binary and (Reichenbachian) ternary approach to tense*

The first version of binary-tense theory was formulated in Te Winkel (1866), who distinguished three binary oppositions defining the Dutch tense system. The oppositions are given in (8) in the feature notation used in Verkuyl (2008) as an informal abbreviation of a set of explicit semantic formulas; Verkuyl regards the oppositions as privative, which makes the plus-values marked. This section aims at comparing the formal properties of the tense system defined by the three binary features in (8) to that defined by the two ternary features normally adopted in the Reichenbachian approaches: since the precise meaning of these features and the tenses defined by them are not of immediate concern to achieving this goal, their discussion will be deferred to Sections 2.2 and 2.3.

- (8) a.  $[\pm\text{PAST}]$ : present versus past  
       b.  $[\pm\text{POSTERIOR}]$ : synchronous versus posterior (w.r.t. speech time)  
       c.  $[\pm\text{PERFECT}]$ : imperfect versus perfect

The three oppositions in (8) define the eight tenses given in Table 1; the labels used for the eight tense forms are the ones that we often find in the linguistic literature. The examples show that the oppositions in (8) are all morphosyntactically expressed in Dutch:  $[\pm\text{PAST}]$  is expressed by the inflection on the finite verb,  $[\pm\text{POSTERIOR}]$  by the absence or presence of the verb *zullen* ‘will’ (or other epistemic modal verbs), and  $[\pm\text{PERFECT}]$  by the morphological form of the main verb (viz. non-participle versus participle form). Note in passing that *zullen* ‘will’ is not analyzed as a specialized future auxiliary; I will return to this issue in Section 2.3.

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<sup>5</sup> This is not because this development cannot be understood in terms of binary-tense theory. The opposite holds true, as the default reading of the present perfect only differs from the default reading of the simple past in that it adds (i.e. makes explicit) the meaning component of completion.

Table 1: Tense forms according to Te Winkel (1866) and Verkuyl (2008)

		PRESENT	PAST
SYNCHRONOUS	IMPERFECT	simple present <i>Ik wandel.</i> I walk	simple past <i>Ik wandelde.</i> I walked
	PERFECT	present perfect <i>Ik heb gewandeld.</i> I have walked	past perfect <i>Ik had gewandeld.</i> I had walked
POSTERIOR	IMPERFECT	future <i>Ik zal wandelen.</i> I will walk	future in the past <i>Ik zou wandelen.</i> I would walk
	PERFECT	future perfect <i>Ik zal hebben gewandeld.</i> I will have walked	future perfect in the past <i>Ik zou hebben gewandeld.</i> I would have walked

It is important to realize that Te Winkel and Verkuyl both take a mentalistic stance in supposing that the distinctions in (8) are part of the human cognitive system; the distinctions in (8) can therefore be assumed to be universals of human language but are not necessarily conveyed by the verbal system, as there are various alternative ways of expressing them: particles, adverbials, etc. I will not discuss this here but refer to Verkuyl (2008: ch.6) for a discussion of Mandarin and Russian, which have a verbal tense system that is poorer than might be expected on the basis of (8). Verkuyl (2008; in progress) also discusses French and Bulgarian, which appear to have more than eight verbal tense forms.

The binary-tense approach is attractive in that it accords well with the tense forms found in Germanic languages like Dutch and German. In this respect it differs from the currently dominant tense theories following Reichenbach (1947), which are based on the two ternary oppositions in (9): S stands for speech time, that is, the time at which the sentence is uttered; R stands for the so-called reference point; E stands for event time, that is, the time point (or interval) at which the eventuality denoted by the lexical projection of the main verb is located. The comma and the em-dash “—” express, respectively, a relation of simultaneousness and a relation of precedence: S,R thus states that the speech time and the reference point share the same point on the timeline, R—S that the speech time follows the reference point, and S—R that the speech time precedes the reference point.<sup>6</sup>

- (9) a. present (S,R), past (R—S), and future (S—R)  
b. simultaneous (R,E), anterior (E—R), and posterior (R—E)

<sup>6</sup> Reichenbachian theories phrased in terms of intervals add the (aspectual) notion of temporal inclusion: cf. Klein (1994). Thus, like binary-tense theory, they are able to express the notion of completion of the eventuality. However, they normally do this by making an additional distinction between (*im*)perfect and (*im*)perfectivity, as in Deo (2012: 163) and Gvozdanović (2012: 789ff.). This distinction is missing as part of binary-tense theory (although it will be covered by theories on Aktionsart). An in-depth comparison between binary-tense theory and Reichenbachian theories of this nature requires an investigation in itself.

The oppositions in (9) define nine different tenses, which are depicted in Figure 1. This figure also shows that the crucial ingredient of Reichenbach's theory is the reference point R, as it allows us to define the three perfect tenses (E—R) as well as the future in the past (R—E) besides the three-way distinction between the past, the present and the future, which we would expect on the basis of the linear development of time.<sup>7</sup>

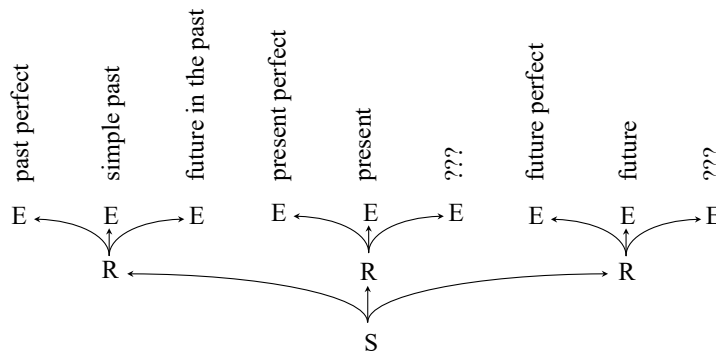


Figure 1: Reichenbach's tense system

Seven out of the nine predicted tenses can indeed be found in Dutch, but Reichenbach's proposal is not able to account for the future perfect in the past: *Ik zou hebben gewandeld* 'I would have walked'. The reason for this is quite simple: all perfect tenses in Figure 1 involve the anterior relation E—R while the future part of the future in the past involves the posterior relation R—E; combining the two in the future perfect in the past thus leads to the contradiction that E both precedes and follows R. There are proposals that try to resolve this contradiction by the introduction of a *second* reference point R' (see Prior 1967, Comrie 1985, and many others since), but this, of course, weakens the original proposal that tense systems can be described by postulating no more than the three temporal points S, R, and E, on the basis of the two ternary oppositions in (9).

A second problem for Reichenbach's proposal is that there are in fact two different notions of future: one type is defined as future (S—R) and another one as posteriority (R—E), but it remains to be seen whether there are any systematic semantic differences between S,R—E, S—R,E and S—R—E.<sup>8</sup> Observe that it is impossible to drop one of

<sup>7</sup> Observe that Figure 1 is misleading in that it suggests that the future in the past locates E before S and that the future perfect locates E after S, while in both cases E may either precede or follow S. This can be accounted for in the Reichenbachian approach by taking the relations between S and R in (9a) and between R and E in (9b) as the primitive ones, which correctly predicts that the time span between R and E may include S; cf. Comrie (1985: §6) and Hornstein (1990: §3.6). This issue is not relevant for our present discussion.

<sup>8</sup> Hornstein (1990: §3.2/6) refers to these relations as proximate future, future and distant future, but there is nothing in his theory that requires the E-point of the presumed proximate future to precede the E-points of the future or distant future, or the E-point of the presumed distant future to follow the E-points of the future or proximate future. It thus remains to be seen whether the introduction of these terms can be empirically motivated. It is important to note that Comrie (1985: 74) suggests that the S—R—E relation is found in Latin constructions such as *datūrus erit* (lit. 'about-to-give he-will be'), in which the so-called future participle is used with the future tense of the auxiliary. However, as the gloss already suggests, the future participle does not express future but refers to an *actio instans* (an action that is about to begin), that is, it conveys



these relations in favor of the other, given that this would result in too few future tenses; if we drop the relation  $S \rightarrow R$ , as in the left part of Figure 2, we will no longer be able to derive the future perfect as this would exclude the final triplet in Figure 1; if we drop the relation  $R \rightarrow E$ , as in the right part of Figure 2, we will no longer be able to account for the future in the past as this would exclude the third option in each triplet. Figure 2 shows that both adaptations lead to a system with just six tense forms, which means two tenses too few for an adequate description of the Dutch tense system.

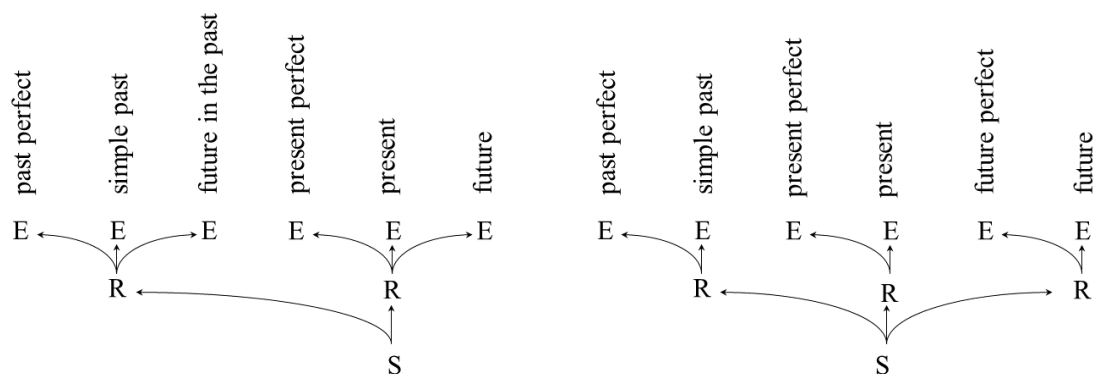


Figure 2: Adapted versions of Reichenbach's tense system

A third problem is that, at least in Dutch, the nine tenses defined in the Reichenbachian system cannot be compositionally derived: cf. Verkuyl (2012; in progress). We have seen that in the binary system the three oppositions in (8) are nicely matched by specific morphological or lexical units, but this does not seem to hold for the ternary oppositions in (9) postulated in the Reichenbachian approach; although there are designated morpho-syntactic means for expressing the present-past opposition ( $R, S$  and  $R \rightarrow S$ ), the future ( $R \rightarrow S$ ) and the perfect ( $E \rightarrow R$ ), it remains to be seen whether such means can be identified for the expression of the simultaneous and the posteriority relation ( $R, E$  and  $R \rightarrow E$ ). This becomes especially apparent for the posteriority relation when we place the nine tenses defined in Figure 1 in the matrix in Table 2 and try to match these with the tense forms actually found in Dutch. The problem is that the matrix seems to define two (posteriority) tenses too many and it needs to be established whether these tenses can indeed be found in the languages of the world; see note 8. The Dutch tense form that comes closest to the two gaps in Figure 1 is the one with the present-tense form of *zullen* 'will', which suggests that *zal lopen* 'will walk' should be taken to be three-ways ambiguous in Reichenbach's system as is indicated by the three cells within the bold lines in Table 2, based on Verkuyl (2008; 2012).

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some form of inchoative aspect. Finally, as far as I can see, Comrie does not provide evidence showing that  $S, R \rightarrow E$  and  $S \rightarrow R, E$  should be distinguished.

Table 2: Reichenbach's tense system matched to the Dutch system

	PAST (R—S)	PRESENT (S,R)	FUTURE (S—R)
ANTERIOR (E—R)	past perfect <i>had gelopen</i> 'had walked'	present perfect <i>heeft gelopen</i> 'has walked'	future perfect <i>zal hebben gelopen</i> 'will have walked'
SIMULTANEOUS (R,E)	simple past <i>liep</i> 'walked'	simple present <i>loopt</i> 'walks'	future <i>zal lopen</i> 'will walk'
POSTERIOR (R—E)	future in past <i>zou lopen</i> 'would walk'	??? <i>zal lopen</i> 'will walk'	??? <i>zal lopen</i> 'will walk'

Table 2 also shows that Reichenbach's approach leads to the conclusion that the verb *zullen* 'will' expresses not only future (S—R) but also posteriority (R—E); see also Janssen (1983). This, in turn, predicts that the S—R—E relation should be expressed by means of *two* occurrences of *zullen*. The fact that *\*zal zullen wandelen* (lit.: will walk) is excluded in Dutch therefore suggests that the posteriority (R—E) relation is not part of the tense system.<sup>9</sup>

This subsection has shown that there are various serious empirical problems with Reichenbach's tense system, which are all related to the postulated posteriority (R—E) relation: (i) posteriority is incompatible with anteriority and as a result the future perfect in the past cannot be defined in terms of the two ternary oppositions in (9); (ii) it is not clear how posteriority and future differ semantically; (iii) posteriority defines a number of future tenses the existence of which remains to be established. Since it seems impossible to solve these problems in a non-*ad hoc* way by replacing the posteriority relation by some other relation, I conclude with Verkuyl (2008; in progress) that the binary-tense approach is descriptively more adequate than the Reichenbachian approach.

## 2.2 The present/past tense in binary-tense theory

Binary-tense theory as formulated in Verkuyl (2008) and later work crucially differs from Reichenbachian approaches in that it does not identify the notion of present with the notion of speech time. Strictly keeping the notions 'speech time' and 'present' apart turns out to offer important advantages. For example, it allows us to treat present tense as part of a developing discourse: shifting of the speech time does not necessarily lead to shifting of the present. In the binary system, the present tense is seen as referring to some larger temporal (present-tense) domain *i* that *includes* speech time *n* (formally represented as *i*  $\circ$  *n*). The crucial assumption that distinguishes binary-tense theory from other approaches is that the use of the present-tense form signals that the speaker is speaking about eventualities as occurring in his present *even though these eventualities need not occur at*

<sup>9</sup> Section 2.3 will show that the future reading can also be triggered by epistemic modal verbs other than *zullen*; see the discussion of the examples in (19). If so, this shows that the unacceptability of *\*zal zullen wandelen* is not due to some form of syntactic haplology, as grammatical forms such as *zal moeten/kunnen wandelen* (lit.: will must/can walk) do not allow an epistemic (future) reading of the modals *moeten* and *kunnen*.

*the point of speech itself*. This can be illustrated by the fact that a speaker could utter an example such as (10a) on Wednesday in order to express that Jan is dedicating (part of) the week including speech time  $n$  to flying to the US. That the present refers to a time interval is also evident from the fact that this example can be followed in discourse by the present tense utterances in (10b-d), which divide the present-tense interval evoked by the adverbial phrase *deze week* ‘this week’ in (10a) into (possibly overlapping) subparts  $j$ , which may precede, include or follow speech time  $n$ . Note that this implies that the notion present tense cannot be equated with the simple-present but also includes the present-perfect, the future and the future-perfect tense; cf. Table 1.

- (10) a. Jan gaat deze week naar de Verenigde Staten. [j includes n]  
 Jan goes this week to the United States  
 ‘Jan is going to the US this week.’
- b. Hij heeft eergisteren zijn vliegtuig geboekt. [j precedes n]  
 He has day.before.yesterday his airplane booked  
 ‘He booked his flight the day before yesterday (=Monday).’
- c. Hij rijdt nu naar het vliegveld. [j includes n]  
 he drives now to the airport  
 ‘He is driving to the airport now.’
- d. Hij zal morgen in New York arriveren. [j follows n]  
 he will tomorrow in New York arrive  
 ‘He will arrive in New York tomorrow (= Thursday).’

Now, suppose that the speaker intended to say that he was on the verge of going to Jan on the Wednesday of November 27, 2019, but suddenly realized that this would not be possible because Jan was not at home. He can express this by using the sequence of sentences in (11). We can describe this in a parallel way to the discourse chunk in (10) by postulating a temporal (past-tense) domain  $i'$  that *includes* some conceivable speech-time-in-the past  $n'$  (which is formally represented as  $i' \circ n'$ ).<sup>10,11</sup> Note that the examples in (11) show that the notion of past tense cannot be equated with the simple-past tense; Table 1 shows that it includes three more past tenses: the past perfect, the future in the past and the future perfect in the past.

<sup>10</sup> Verkuyl (2008) assumed that the defining property of the past-tense domain  $i'$  is that it precedes speech time  $n$  (i.e.  $i' < n$ ). Although  $i' < n$  is commonly taken to be the default interpretation of past tense, this definition was shown to be problematic in Broekhuis and Verkuyl (2014), in which it was replaced by the one given in the main text ( $i' \circ n'$ ). An important advantage of this revision is that it eliminates an asymmetry in the definition of the present and past tenses, in accordance with Te Winkel’s original idea that the present and past tenses should be defined in strictly parallel ways.

<sup>11</sup> Strictly speaking, the use of  $i$  and  $i'$  for, respectively, the present-tense and the past-tense domain is not needed as the interpretation of an interval  $i$  as a present-tense or a past-tense domain is fully determined by the question as to whether it includes speech time  $n$  ( $i \circ n$ ) or speech-time-in-the past  $n'$  ( $i \circ n'$ ). I will nevertheless adopt this notational convention in order to avoid confusion, although I refrain from doing so in Figure 3 below for ease of representation.

- (11) a. Jan ging die week naar de Verenigde Staten. [j includes n']  
 Jan went that week to the United States  
 ‘Jan was going to the US that week.’
- b. Hij had op maandag zijn vliegtuig geboekt. [j precedes n']  
 He had on Monday his airplane booked  
 ‘He booked his plane on Monday.’
- c. Hij reed nu naar het vliegveld. [j includes n']  
 he drove now to the airport  
 ‘He was driving to the airport now.’
- d. Hij zou op donderdag in New York arriveren. [j follows n']  
 he would on Thursday in New York arrive  
 ‘He would arrive in New York on Thursday.’

The sequences of utterances in (10) and (11) show that what counts as the present/past for the speaker/hearer constitutes a temporal domain consisting of several subdomains, each of them referred to by a temporal adverbial phrase that locates the four eventualities  $k$  expressed by these utterances more precisely within the interval referred to by *deze week* ‘this week’ in (10a) and *die week* ‘that week’ in (11a). Following Broekhuis and Verkuyl (2014), the representation of a present/past-tense domain can be depicted as in Figure 3: the dotted line represents the time line;  $n$  stands for the speech time and  $n'$  for the speech-time-in-the past;  $i$  stands for the time interval that is construed as the present/past domain for the speaker and the hearer (see note 11). The role of the rightward shifting speech time  $n$  is to split the present-tense interval  $i$  into an actualized part  $i_a$  (the present preceding  $n$ ) and a non-actualized part  $i_\diamond$  (the present following  $n$ ); the same can be assumed for the speech-time-in-the-past  $n'$ . The optional time adverbs select specific subintervals of the present/past-tense domain, in which the eventualities  $k$  are situated; such subintervals will be referred to as the present  $j$  of  $k$ .<sup>12</sup>

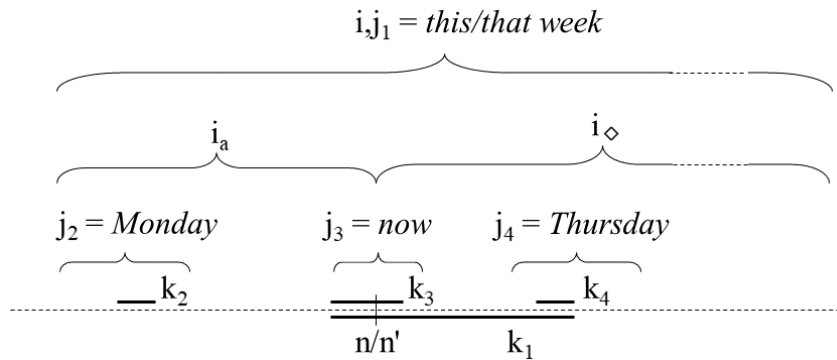


Figure 3: The present/past-tense interval

<sup>12</sup> This statement is actually a simplification, as a time adverbial may also select a specific subinterval of the present/past-tense domain, in which the present  $j$  of  $k$  is situated. This accounts for the fact that clauses can contain two time adverbials, as in *dat Jan deze week waarschijnlijk op maandag vertrekt* ‘that Jan will probably leave on Monday this week’. The sentence adverb *morgen* can be seen as a modifier of  $j$  while the VP-adverbial *om drie uur* can be seen as a modifier of  $k$ ; see Broekhuis and Corver (2016: §8.2.3) and Verkuyl (in progress; ch.6) for more extensive discussion of examples of this sort.

For convenience sake, I have marked  $j$  and  $k$  with numeral indices in order to distinguish the various eventualities referred to by the utterances in (10)/(11). I have also taken the present  $i$  to be synchronous with present  $j_1$  of  $k_1$ , but it should be noted that depending on the common ground, the latter can also be a subpart of  $I$ . The positioning of  $k_I$  (= Jan going to the US) assumes that this eventuality starts when Jan leaves home and ends when he arrives in the US; nothing specific hinges on this assumption.

### 2.3 The four present tenses in a binary-tense approach

Because the discussion of the examples in (10) and (11) has shown that the past-tense domain is structured in a parallel manner to the present-tense domain and since we are especially interested in the *present* perfect, we will put the past tenses aside from now on and continue with a description of the four present tenses in the first column of Table 1; for an extensive discussion of all eight Dutch tenses, see Broekhuis et al. (2015: §1.5.4).

The examples of the simple present in (10a,c) perhaps suggest that the simple present requires eventuality  $k$  (and thus also its present  $j$ ) to include speech time  $n$ , as depicted for example (12) in Figure 4.

- (12) Jan rijdt naar het vliegveld. [simple present;  $j$  includes  $n$ ]  
 Jan drives to the airport  
 ‘Jan drives to the airport.’

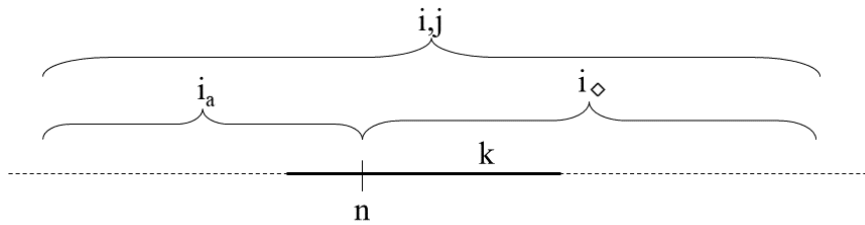


Figure 4: Simple present (default)

Although the representation in Figure 4 can be seen as the default reading of the simple present, there are cases in which the simple present allows eventuality  $k$  and its present  $j$  to precede or follow  $n$ . The first holds for examples such as (13), in which the frequency adverb *vaak* ‘often’ expresses that there have been many occurrences of the eventuality of *Jan going to the US* before speech time  $n$ , as indicated in Figure 5.<sup>13</sup>

- (13) Jan gaat vaak naar de Verenigde Staten. [simple present;  $j$  precedes  $n$ ]  
 Jan goes often to the United States  
 ‘Jan often goes to the US.’

<sup>13</sup> Example (13) also raises the expectation that there will be more occurrences of  $k$  as the rightward shifting  $n$  moves farther on the time line, but this is not indicated in Figure 5. The reason for this expectation is pragmatic in nature: if the speaker believes that there will be no more occurrences of  $k$ , he can express this more precisely by using the past tense, as the past tense domain precedes  $n$  by default (cf. fn. 10), and therefore normally does not allow for further additions of  $k$ .

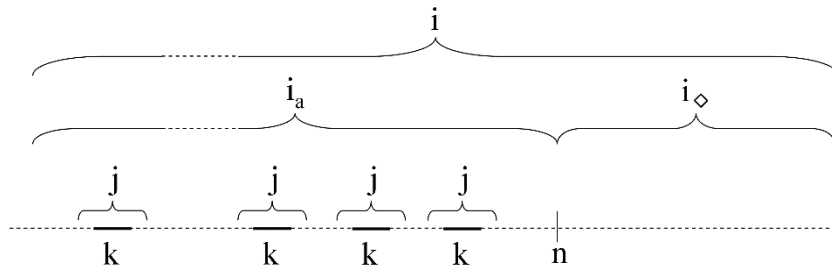


Figure 5: Simple present with the frequency adverb vaak ‘often’

The second holds for examples such as (14), in which the adverbial modifier *morgen* ‘tomorrow’ locates the present *j* of eventuality *k* (*Jan arriving in New York*) in a position following *n*. Note that example (14) can refer to the same situation as the earlier example in (10d) with the presumed future auxiliary *zullen* ‘will’; we will return to this shortly.

- (14) Hij arriveert morgen in New York. [simple present; *j* follows *n*]  
 he arrives tomorrow in New York  
 ‘He will arrive in New York on tomorrow.’

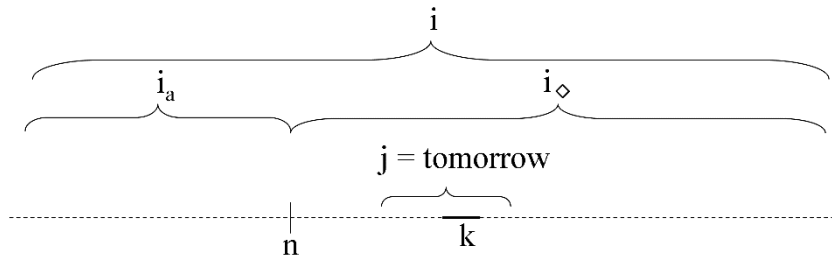


Figure 6: Simple present with a time adverb referring to an interval following *n*

The examples in (12) to (14) show that in principle the simple present allows the present *j* of *k* to occur anywhere in present-tense domain *i*. If this is indeed correct, the unacceptability of simple-present example (15) with the time adverbial *gisteren* ‘yesterday’ is surprising. Because there does not seem to be any grammatical reason for excluding the tense representation in Figure 7, example (15) is marked with a hash sign in order to indicate that there must be some other, probably extra-grammatical, reason for its unacceptability.

- (15) #Hij boekt gisteren zijn vliegtuig. [simple present; *j* precedes *n*]  
 He books yesterday his airplane

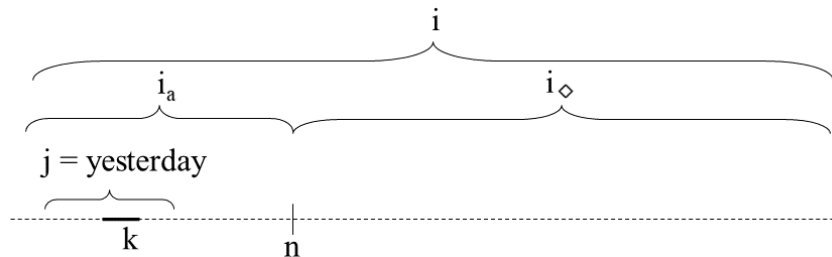


Figure 7: Simple present with a time adverb referring to an interval preceding *n*

This extra-grammatical reason at least partly resides in the fact that the present-perfect example in (10b), repeated here in a slightly different form as (16), is the canonical way of expressing the intended proposition. The tense representation of present-perfect construction (16) in Figure 8 is identical to the representation of the simple-present construction in (15) in Figure 6, but for one thing, the meaning contribution of the past participle, namely completion: while an eventuality  $k$  in a simple-present construction may or may not be completed within its present  $j$  (formally represented as  $k \leq j$ ), it must be completed within  $j$  in the case of a present-perfect construction ( $k < j$ ); this is indicated by the absence versus presence of the short vertical line at the end of time line of  $k$  in the two figures. This means that Grice's (1975) cooperative principle will prefer the present-perfect construction in (16) to the simple-present construction in (15) for referring to completed actions in the actualized part  $i_a$  of the present-tense domain: it is simply the most informative one.<sup>14</sup>

- (16) Hij heeft (gisteren) zijn vliegtuig geboekt. [present perfect;  $j$  precedes  $n$ ]  
 He has yesterday his airplane booked  
 'He booked his plane the day before yesterday (=Monday).'

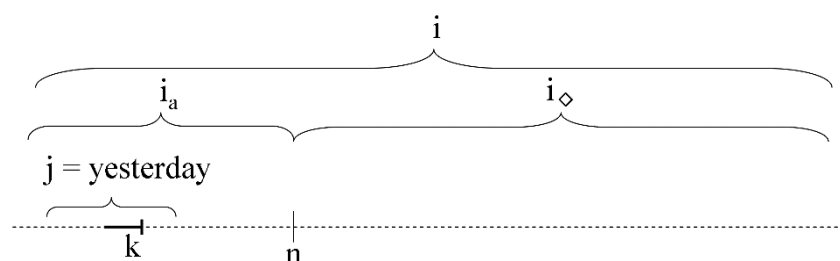


Figure 8: Present perfect (default  $\exists$ -perfect reading)

The representation in Figure 8 illustrates the default  $\exists$ -perfect reading of present-perfect examples, as is clear from the fact that it also arises without an adverbial modifier such as *gisteren* 'yesterday'. The statement that present  $j$  of  $k$  precedes  $n$  is not part of the meaning of the present perfect, however, since the default  $\exists$ -perfect reading can be canceled by contextual factors. The use of the adverbial *morgen* 'tomorrow' in example (17), for instance, locates the present  $j$  of  $k$  in a position following  $n$ ; we are dealing with a marked reading in the sense that the speaker makes a prediction about the question as to whether the eventuality of Jan booking his plane will have taken place tomorrow; I will refer to this use of the present perfect as the non-actualized or  $\diamond$ -perfect reading.

- (17) Jan heeft morgen zijn vliegtuig (nog niet) geboekt. [present perfect;  $j$  follows  $n$ ]  
 Jan has tomorrow his airplane (yet not) booked  
 'Jan will (not yet) have booked his plane tomorrow.'

<sup>14</sup> This pragmatic account for the impossibility of present tenses example such (15) does not exclude stative constructions such as *\*Jan weet gisteren het antwoord* (lit: 'Jan knows the answer yesterday') but for such cases we may appeal to the fact that past-tense constructions may be best suited to describe the intended situation; cf. Section 3.1.

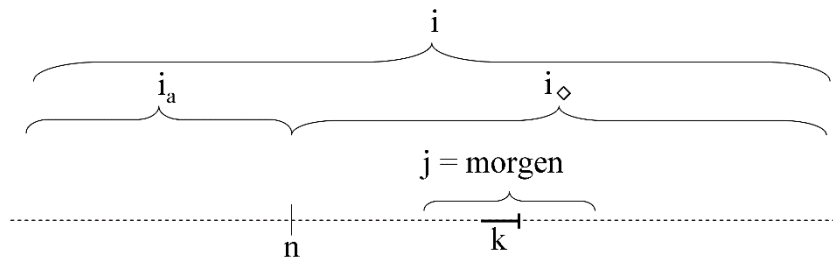


Figure 9: Present perfect (marked  $\diamond$ -perfect reading)

The examples in (14) and (17) have shown that simple-present and present-perfect examples can easily refer to eventualities in the non-actualized part  $i_\diamond$  of the present-tense domain. These examples are therefore more or less synonymous to the two examples in (18) with the verb *zullen*, which are traditionally analyzed as constructions with, respectively, future and future-perfect tense; see Table 1.

- (18) a. Hij zal morgen in New York arriveren. [= (10d)]  
 he will tomorrow in New York arrive  
 ‘He will arrive in New York tomorrow.’  
 b. Jan zal morgen zijn vliegtuig geboekt hebben.  
 Jan will tomorrow his airplane booked have  
 ‘Jan will (not yet) have booked his plane tomorrow.’

Broekhuis and Verkuyl (2014) show, however, that the interpretation of the constructions in (18b) is not really dependent on *zullen*. First, the temporal interpretation does not really change when *zullen* is replaced by an epistemic modal verb like *moeten* ‘must’ or *kunnen* ‘can’ in the sense that *moeten* and *kunnen* likewise locate the present  $j$  of  $k$  in the non-actualized part  $i_\diamond$  of the present-tense domain in the default case.<sup>15</sup> Second, examples containing modal adverbs like *zeker* ‘certainly’ or *waarschijnlijk* ‘probably’ instead of the verb *zullen* ‘will’ are likewise able to locate the present  $j$  of  $k$  in  $i_\diamond$ ; cf. *Hij arriveert morgen zeker/waarschijnlijk in New York* ‘He will certainly/probably arrive in New York tomorrow’ and *Jan boekt volgende week zeker/waarschijnlijk zijn vliegtuig* ‘Jan will certainly/probably have booked his plane by next week.’

- (19) a. Hij moet/kan morgen in New York arriveren.  
 he must/can tomorrow in New York arrive  
 ‘It must/may be the case that Jan will arrive in New York tomorrow.’  
 b. Jan moet/kan morgen zijn vliegtuig geboekt hebben.  
 Jan must/can tomorrow his airplane booked have  
 ‘It must/may be the case that will have booked his plane tomorrow.’

This shows that locating of the present  $j$  of  $k$  in  $i_\diamond$  is not a privileged property of the verb *zullen* but is equally a property of various kinds of lexical elements expressing epistemic modality. And even then, there is reason to doubt that epistemic modality necessarily locates  $j$  in  $i_\diamond$ , as is clear from the fact that omission of the time adverbials in (18b) and

<sup>15</sup> The examples in (19) are ambiguous and may also express a deontic meaning; this is not relevant here.



(19b) allows for locating  $j$  in the actualized part  $i_a$  of the present-tense domain when the speaker does not have all the details on the situation at speech time: the resulting epistemic interpretations can then be paraphrased as “It will/must/can be the case that Jan has booked his airplane”. Broekhuis and Verkuyl conclude from this that the location of  $j$  depends on the knowledge state of the speaker at speech time  $n$  and that the future reading triggered by *zullen* (which they analyze as an evidentiality marker expressing high confidence) and other epistemic modal lexemes is simply a pragmatic effect of the default assumption that the speaker is fully informed regarding the situation at speech time  $n$ . This underlines the earlier statement that the temporal interpretation of utterances is not necessarily hard-coded in the verbal system of a language, but largely brought about by pragmatic reasoning.

The discussion above amounts to saying that the future readings of the *zullen* constructions in Table 1 are not strictly temporal in nature, but derive from the standard possible-world semantics of epistemic modal verbs by pragmatic reasoning. Thus, the true binary opposition is whether a construction does or does not evoke possible worlds: the simple-present example in (14), for instance, presents the (future) occurrence of the eventuality of Jan arriving in New York as a simple fact, while the modal constructions in (18a) and (19a) present it as highly likely, necessary or possible; see Broekhuis and Verkuyl for more detailed discussion.

The more recent version of binary-tense theory sketched above indicates that it is moving in the direction of a theory in which tense (present vs. past), modality (established vs. possible worlds) and aspect (non-completion vs. completion) interact in providing the cognitive representations of utterances; see Broekhuis (2016) for a first suggestion along these lines and Verkuyl (in progress) for a more detailed proposal. Although the presentation above is informal, it should be clear that the proposal is supported by the fact that it fits well with (i) the syntactic architecture of the clause developed in recent decades, which includes distinct functional layers expressing, among other things, temporal, modal and aspectual information (see, e.g. Cinque 1999), as well as (ii) the semantic postulate that meaning is constructed in a compositional manner; see Verkuyl (in progress) for further details.

#### 2.4 *The existential versus universal reading of the present perfect*

Section 2.3 included a discussion of the meaning of the present perfect within the binary-tense approach; present-perfect constructions refer to eventualities that are completed within the present-tense domain. This meaning description does not include the Reichenbachian statement that the termination point of eventuality  $k$  precedes speech time  $n$ . That this is indeed the default reading of the perfect tense is now attributed to pragmatic factors; see the discussion of Figure 8. This conclusion is a first step in accounting for the uses of the present perfect in (1), as we can now characterize the difference between the  $\exists$ -perfect and  $\forall$ -perfect reading of the examples in (20) by considering the location of the termination point of the non-mutative eventuality  $k$ . Recall from the discussion of examples (2) and (6) in Section 1 that Dutch and English behave similar in this case.

- (20) a. Jan heeft in Berlin gewoond. [default;  $\exists$ -perfect]  
 Jan has in Berlin lived  
 ‘Jan has lived in Berlin.’  
 b. Jan heeft sinds 1999 in Berlijn gewoond. [marked:  $\forall$ -perfect]  
 Jan has since 1999 in Berlin lived.  
 ‘Jan has lived in Berlin since 1999.’

If eventuality  $k$  has been terminated before speech time  $n$ , as is the case under the default reading of (20a), we are dealing with the  $\exists$ -perfect; when  $k$  ends at speech time  $n$  (or within the non-actualized part  $i_\diamond$  of the present-tense domain), we are dealing with the  $\forall$ -perfect. The tense representations are given in Figure 10, in which the broken lines indicate the non-actualized part of  $k$ . The visualization shows that the two readings follow naturally from the independently established meaning of the perfect tense established above; the  $\forall$ -perfect is simply the third (and final) logically available option next to those depicted in Figure 8 ( $k$  precedes  $n$ ) and Figure 9 ( $k$  follows  $n$ ), in which  $k$  includes  $n$ . Note that we now have in fact replaced the earlier dichotomy between the  $\exists$ -perfect and the  $\forall$ -perfect reading by the three-way distinction between present-perfect readings predicted by binary-tense theory.

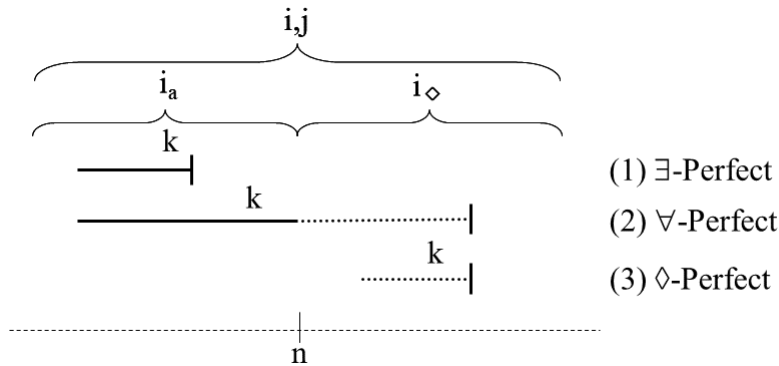


Figure 10: Basic uses of the present perfect (with non-mutative predicates)

However, we are still left with the problem why the  $\forall$ -perfect is normally assumed not to arise with mutative predicates (again neither in Dutch nor in English). The answer to this question is related to the fact that non-mutative predicates exhibit the so-called subinterval property; see Bennett and Partee (1978) and Mittwoch (1988).<sup>16</sup> This entails that the present perfect of non-mutative predicates can refer to subparts of the eventuality: if John has been living in Berlin during a specific time interval  $I$ , the utterance in (21a) would be true at any time in  $I$ . This does not hold for the present perfect of mutative predicates: if John had been building a house during a specific time interval  $I$ , the utterance in (21b) would only be true if the eventuality of John building a house is completely actualized.

<sup>16</sup> The description of this property given by Bennett and Partee is as follows: subinterval verb phrases have the property that if they are the main verb phrase of a sentence which is true at some interval of time  $I$ , then the sentence is true at every subinterval of  $I$  including every moment of time in  $I$ . Examples of subinterval verb phrases are: *walk, breathe, walk in the park, push a cart*.

- (21) a. Jan heeft sinds 1999 in Berlijn gewoond.  
 Jan has since 1999 in Berlin lived  
 ‘Jan has lived in Berlin since 1999.’  
 b. Jan heeft (\*sinds 1999) een huis gebouwd.  
 Jan has since 1999 a house built  
 ‘Jan has built a house.’

Figure 11 indicates why the  $\forall$ -perfect reading is only available for non-mutative predicates. On the assumption that  $k_1$  is non-mutative, the present perfect can be used to refer to the subpart of  $k_1$  located in the actualized part of the present tense domain  $i_a$ . Given that the *here-and-now* is part of the speaker’s deictic center by default, the present perfect will normally be interpreted from the perspective of speech time  $n$  (indicated by a circle). This accounts for the core characteristic of the  $\forall$ -perfect in (1a): the eventuality holds throughout some time interval beginning at a certain point preceding speech time  $n$  until (at least) speech time. On the assumption that  $k_2$  is a mutative predicate, the present perfect cannot be used to refer to subparts of  $k_2$ , but only to the complete eventuality after it has reached its culmination point, that is, when the state transition implied by the predicate has taken place (again indicated by means of a circle). This means that, apart from the location of the left boundary of the eventuality, the interpretation of (21b) is essentially identical to that of the (marked)  $\diamond$ -perfect in Figure 10; it is therefore most easily interpreted as a prediction by the speaker and normally requires the presence of a time adverbial such as *over vijf jaar* ‘in five years’.

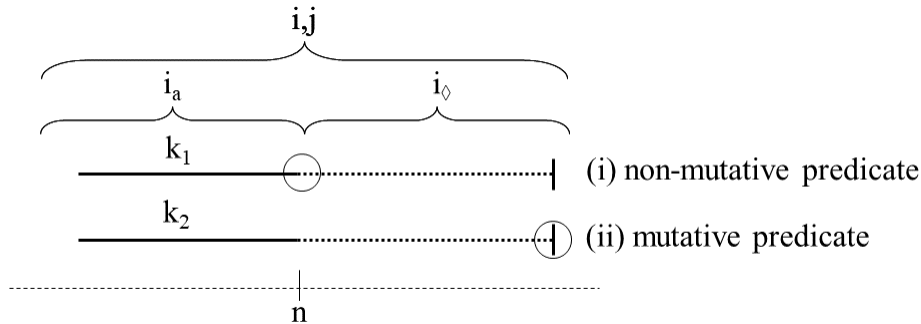


Figure 11: Why the  $\forall$ -perfect reading is only available with non-mutative predicates

The discussion above has shown how we can derive the characteristic properties of the  $\forall$ -perfect reading from the *unique* meaning that binary-tense theory attributes to the present perfect (i.e. completion within the present-tense domain  $i$ ). That this reading is possible with non-mutative predicates only follows from an independently established difference between non-mutative and mutative predicates with respect to the subinterval property: the  $\forall$ -perfect reading is available only when a present-perfect construction can be used to refer to subparts of the eventuality expressed by the utterance.

### 3 The diachronic development of the perfect tense construction

Gothic did not have perfect-tense constructions of the sort we find in the present-day Germanic languages. The development of this tense form is considerably obscured for want of sources, as most present-day languages already had some form of the perfect

tense in their earliest written records; cf. Dal and Eroms (2014: §92). Nevertheless, a more or less coherent picture of the development of the perfect tense can be gleaned from the seminal works by Paul (1902) and Kern (1912). Kern's version was summarized in (7) above, repeated here as (22).

- (22) a. Stage I: The rise of (state-denoting) adjectival participles with the verbs HAVE and BE in, respectively, copular-like and perfect passive-like constructions.  
 b. Stage II: Reanalysis of adjectival participles as (process-denoting) verbal participles, which gives rise to HAVE perfects with transitive verbs and to BE perfects with mutative intransitive verbs.  
 c. Stage III: Spread of HAVE perfects to constructions with non-mutative intransitive verbs.

This section will briefly discuss the three stages in (22), with special attention to their implications for the interpretation of present-perfect constructions; see Broekhuis (2021) for a more general discussion. The discussion of the predicative use of adjectival participles in Section 3.1 is perhaps less significant but it sets the stage for the discussions of the two subsequent developments. The reanalysis of adjectival participles as verbal participles discussed in Section 3.2 will be shown to be essential in understanding how making the distinction between the  $\exists$ -perfect in (1b) and the R-perfect reading in (1c) became possible. The discussion of the spread of HAVE perfects to non-mutative intransitives in Section 3.3 will be shown to be important in understanding why the distribution of the  $\exists$ -perfect reading differs from the R-perfect and  $\forall$ -perfect reading in that it is not restricted by the Aktionsart of verbal predicates.

### 3.1 *The first stage in the development of the Germanic perfect tense*

The first stage in the development of the Germanic perfect tense seems relatively simple, and involves the insertion of a deverbal adjectival participle in the predicative slot of the pre-existing predicative constructions in (23). Example (23a) is a run-of-the-mill copular construction (with the copula BE), while (23b) is what I will call a semi-copular construction (with the semi-copula HAVE).

- (23) a. Het raam is open<sub>A</sub>. [copular construction with BE]  
 The window is open  
 b. Jan heeft het raam open<sub>A</sub>. [semi-copular construction with HAVE]  
 Jan has the window open

In current generative grammar the predication relation between the adjective *open* and the noun phrase *het raam* is claimed not to be direct but mediated by a LINKER, that is, a functional head which is often referred to as Pred, as in the structures in (24); see Bowers (1993) and Den Dikken (2006) for extensive discussion. The fact that *het raam* is realized as a subject in the copular construction in (24a) but as an object in the semi-copular construction in (24b) follows from properties of BE and HAVE. The verb *zijn* is a so-called unaccusative verb, which is unable to assign accusative case to the external argument of the adjective (*het raam*), which must therefore appear as the nominative subject of the clause. The verb *hebben*, on the other hand, can assign accusative case to this argument, which therefore appears as the direct object of the semi-copular construction.

- (24) a. Het raam<sub>i</sub> is [<sub>PredP</sub> *t<sub>i</sub>* Pred [<sub>AP</sub> open]].  
           the window is open  
       b. Jan heeft [<sub>PredP</sub> het raam Pred [<sub>AP</sub> open]].  
           Jan has the window open

Observe that the nominal argument *Jan* in the semi-copular construction in (24b) is not an agent in the traditional sense of the word but rather refers to a participant who controls the eventuality expressed by PredP, that is, who *has the ability* to open or close the window, as is clear from the fact that the (24b) has the dynamic counterpart *Jan krijgt het raam (gemakkelijk) open* ‘Jan easily gets the window open’; cf. Van Bree (1981: ch.7) and Broekhuis and Cornips (1994).<sup>17</sup> The copular and the semi-copular construction are both stative and can be represented as in Figure 12, with the three positions of eventuality *k* predicted by binary-tense theory.

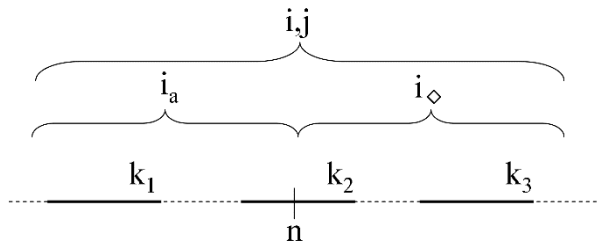


Figure 12: Present-tense constructions with stative eventualities

As with all simple-present constructions, the representation with  $k_2$  is the default reading; see Figure 4 in Section 2.3. The reading with  $k_3$  arises when a time adverbial such as *morgen* ‘tomorrow’ is present or when the context provides reasons for placing the eventuality in the non-actualized part  $i_\diamond$  of the present-tense domain; a more precise representation of this reading (with the adverb *morgen* ‘tomorrow’) was given above as Figure 6. The reading with  $k_1$  is triggered by frequency adverbs such as *vaak* ‘often’ but leads to a degraded result in other cases, as is clear from the unacceptability of (25a’); a more precise representation of this reading (with the adverb *vaak* ‘often’) was given as Figure 5. The use of the hash tag indicates that the reason for the unacceptability of (25a’) is again pragmatic in nature, although the reason is different from the one accounting for the unacceptability of the dynamic present-tense construction in (15), repeated here in a slightly changed form as (25b).

<sup>17</sup> A similar construction occurs in the eastern Dutch dialects and German with an inalienable-possession reading: *Hij heeft de handen gebonden* ‘His hands are cuffed’. Van Bree (1981) claims, however, that the control reading was the prototypical reading of the Old Germanic semi-copular construction. He motivates this claim by pointing to the meaning of the main verbs corresponding to the semi-copulas *hebben* and *krijgen*: main verb *hebben* originally meant something like “to hold/handle” while main verb *krijgen* meant something like “to fight for” or “to obtain by battle”. Van Bree (1981: 382) further claims that the inalienable possession construction occurs only rarely in, e.g., Middle Dutch, which also makes it an unlikely candidate for being the source of the Dutch perfect tense.

- (25) a. Het raam is vaak open<sub>A</sub>. [simple present; j precedes n]  
           the window is often open  
       a'. #Het raam is gisteren open<sub>A</sub>. [simple present; j precedes n]  
           the window is yesterday open  
       b. #Hij boekt gisteren zijn vliegtuig. [simple present; j precedes n]  
           He books yesterday his airplane

Section 2.3 has argued that the unacceptability of (25b) follows from Grice's cooperative principle because the intended interpretation is expressed more felicitously by the default reading of its present-perfect counterpart. Similarly, we can block (25a') by appealing to the fact that the intended reading will be expressed better by the simple past *Het raam was gisteren open* 'The window was open yesterday'. Its default interpretation is as given in Figure 13, where eventuality *k* includes the virtual speech-time-in-the-past *n'* but precedes speech time *n*; *k* normally does not include or follow *n*.

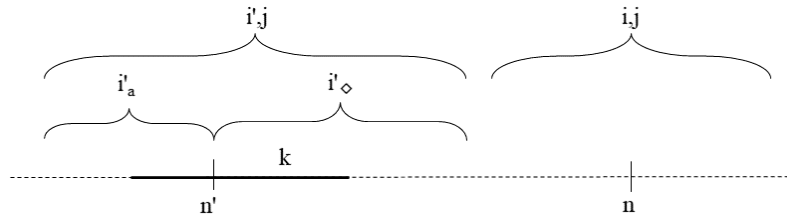


Figure 13: Default interpretation of simple past

Observe that this concludes the pragmatic account of the fact that the simple present does not co-occur with adverbials such as *gisteren* 'yesterday': (i) utterances in the simple present are not used for referring to dynamic eventualities preceding *n* because present-perfect constructions are better equipped for that purpose (Section 2.3) and (ii) they are not used for referring to stative eventualities preceding *n* because simple past constructions are better suited for that purpose (this section).

Now, let us return to the first stage in the development of the perfect tense. When it became possible to form deverbal adjectival participles, it also became possible to form constructions like (26a) and (26b) by inserting these participial forms in the same predicative slot as the simple adjectives in (23)/(24). Because the adjectival participle *geopend* in (26) refers to a property of the original theme argument of the input verb (*het raam*) and not to an eventuality, the sentences in (26a,b) are semantically just like the sentences in (23): they are stative and can be represented as in Figure 12. This justifies the claim that they also have the same syntactic structure as (23); compare the structures in the primed examples to those in (24). Note that the use of the gloss *open* for the adjectival participle *geopend* in (30a) is intentional in order to emphasize that the participle is like 'open' in lacking the dynamic reading needed to evoke the idea of a state transition (cf. Kern 1912: 5).

- (26) a. Het raam is geopend<sub>A</sub>.  
 The window is open  
 a'. Het raam<sub>i</sub> is [<sub>PredP</sub> *t<sub>i</sub>* [<sub>Pred</sub> geopend<sub>A</sub>]]  
 b. Jan heeft het raam geopend<sub>A</sub>.  
 Jan has the window open  
 b'. Jan heeft [<sub>PredP</sub> het raam [<sub>Pred</sub> geopend<sub>A</sub>]]

I noted in passing that the adjectival participle is predicated of the theme argument of the input verb. On the assumption that theme arguments of verbs are always realized as internal arguments, this can be accounted for by postulating that adjectival participles are derived from simple verbs by means of morphological rule (27).<sup>18</sup>

- (27) V → Part<sub>A</sub>; externalize the theme argument of the verb  
 a. Transitive verb: OPENEN<sub>V</sub> (Agent, Theme) → GEOPEND<sub>A</sub> (Theme)  
 b. Mutative intransitive verb: STERVEN<sub>V</sub> (Theme) → GESTORVEN<sub>A</sub> (Theme)

The effect of the morphological rule in (27) for a transitive verb such as *openen* ‘to open’ is given in (27a): the theme argument of the verb is an internal argument of the verb, but becomes an external argument of the adjective; because a lexical head has at most one external argument, the external agent argument of the verb automatically disappears from the argument structure of the adjective. The result for intransitive mutative verbs such as *sterven* ‘to die’ is that the internal theme argument of the verb becomes the external argument of the adjective, and since the verb does not have an external agent argument no further effects arise. For completeness’ sake, I give a more precise structure of copular constructions with adjectival participles derived from transitive and intransitive mutative verbs in (28): in accordance with rule (27) the theme argument is not base-generated within the lexical projection AP, but as the specifier of the PredP. The use of the glosses *open* and *dead* in (28) is again intentional in order to emphasize that the adjectival participles lack the dynamic reading needed for evoking the idea of a state transition.

- (28) a. Het raam<sub>i</sub> is [<sub>PredP</sub> *t<sub>i</sub>* [<sub>Pred</sub> [<sub>AP</sub> geopend]]].  
 The window is open  
 ‘The window is open.’  
 b. De koning<sub>i</sub> is [<sub>PredP</sub> *t<sub>i</sub>* [<sub>Pred</sub> [<sub>AP</sub> gestorven]]].  
 the king is dead  
 ‘The king is dead.’

<sup>18</sup> A note on the terminology pertaining to unaccusative (mutative intransitive) verbs may be useful here. Theme arguments are canonically realized as direct objects in transitive constructions, but as subjects in constructions with unaccusative verbs. In relational grammar, this is accounted for by assuming that theme arguments are always direct objects in underlying form, the so-called first stratum, but can be promoted to subject in some later stratum if no agent is present; cf. Perlmutter (1978). In generative grammar, it is assumed that theme arguments are base-generated as the complement of the verb within the VP (hence the term internal argument) but can be overtly realized as subject in the surface form when no external agent argument is present; see Polmann (1975), Hoekstra (1984), Burzio (1986), and many others. In the argument structures in (27) external arguments are underlined.

An additional virtue of rule (27) is that it immediately accounts for the observation in Kern (1912: 16ff.) and Dal and Eroms (2014: §92) that in the early stages of the Germanic languages, participle forms of intransitive non-mutative verbs are rarely found.

- (29) \*Jan is geslapen<sub>A</sub>. [copular construction with BE]  
 Jan is slept

Adjectival participles like *geslapen* simply cannot be formed by (27) because intransitive non-mutative verbs such as *slapen* ‘to sleep’ differ from intransitive mutative verbs in that they do not have an internal theme argument but an external agent argument: *slapen* (AGENT); see, e.g., Hoekstra (1984: ch.3) and Levin and Rappaport (1986: 654). As a result, they simply cannot be used as the input for rule (27).

### 3.2 The second stage in the development of the Germanic perfect tense

In the second stage, *adjectival* participles become *verbal* participles. This entails that the PredPs in predicative constructions like given in (26), repeated here in slightly updated form as (30a,b), must be reanalyzed as VPs. The primed examples of (30) show that this reanalysis results in a passive construction with BE in the case of (30a) and in a perfect-tense construction with HAVE in the case of (30b). The glosses for the adjectival and verbal participle *geopend* are used to express that verbalization of the participle results in a dynamic (state-transition) reading.

- (30) a. Het raam is [<sub>PredP</sub> *t<sub>i</sub>* [<sub>Pred</sub> [<sub>AP</sub> *geopend<sub>A</sub>*]]]. [copular construction with BE]  
 The window is open  
 ‘The window is open.’  
 a'. Het raam is [<sub>VP</sub> *t<sub>i</sub>* *geopend<sub>V</sub>*]. [passive with BE]  
 the window is opened  
 ‘The window has been opened.’  
 b. Jan heeft [<sub>PredP</sub> het raam [<sub>Pred</sub> [<sub>AP</sub> *geopend<sub>A</sub>*]]]. [semi-copular construction with HAVE]  
 Jan has the window open  
 ‘Jan has the window open.’  
 b'. Jan heeft [<sub>VP</sub> het raam *geopend<sub>V</sub>*]. [perfect with HAVE]  
 Jan has the window opened  
 ‘Jan has opened the window.’

Notice that it is not surprising that the subject in (30b') can be interpreted as the agent of the verbal participle, given that the subjects of semi-copular constructions control the eventuality expressed by PredP; see the discussion in Section 3.1 below (24). It remains to be seen, however, whether it functions as an agentive argument of the participle; I will return to this issue in a moment and argue that this is *not* the case.

With adjectival participles derived from the intransitive mutative verb such as *sterven* ‘to die’, the category shift results in the formation of perfect-tense constructions with BE. This is illustrated for the participle *gestorven* in (31). The glosses for the adjectival and verbal participle *gestorven* again intend to express that verbalization of the participle results in a dynamic (state-transition) reading.



- (31) a. De koning<sub>i</sub> is [<sub>PredP</sub> *t<sub>i</sub>* [<sub>Pred</sub> [<sub>AP</sub> gestorven<sub>A</sub>]]]. [copular construction with BE]  
           the king       is                               dead  
           ‘The king is dead.’
- b. De koning<sub>i</sub> is [<sub>VP</sub> *t<sub>i</sub>* gestorven<sub>V</sub>]. [perfect with BE]  
           the king       is               died  
           ‘The king has died.’

Broekhuis (2021) argues that the verbal participles came into being due to the introduction of the morphological rule in (32), which derives verbal participles from adjectival ones by means of null-affixation (i.e. morphological conversion). This rule accounts for the empirical fact (i) that perfect constructions did not (immediately) replace the older predicative ones and (ii) that the lexical expansion of the perfect tense proceeded on a item-to-item basis; see Kroch (1989) and Coussé (2014: table 2).

- (32)     Part<sub>A</sub> → Part-Ø<sub>V</sub>; internalize the theme argument of the adjective
- a. GEOPEND<sub>A</sub> (Theme) → GEOPEND<sub>V</sub> (Theme)
- b. GESTORVEN<sub>A</sub> (Theme) → GESTORVEN<sub>V</sub> (Theme)

Rule (32) essentially reverses the effects of rule (27) in the sense that the theme argument becomes the internal argument of the verbal participle again. What it does *not* do is adding an external agent argument to the argument structure of the verbal participle *gesloten* in (32a). This means that the reanalysis of (30b) as (30b') does not have anything to say about the function of the verb *hebben*: it remains solely responsible for introducing the agentive-like argument *Jan* in the structure, which can now be seen to either control the state expressed by the semi-copula construction or the state transition (i.e. completion of the eventuality) expressed by the perfect construction. That the agent-like noun phrase in HAVE-perfects is not an argument of the participle in the present-day Germanic languages of course diverges from the standard view but was already argued for on independent, syntactic grounds in Broekhuis and Van Dijk (1995). If correct, this is an important conclusion as it provides us with a principled account for the fact that the same lexical form appears in passive and in perfect constructions; cf. Hoekstra (1984) and later work.<sup>19</sup>

Furthermore, it is worth noting that verbal participles like *geslapen* are predicted still to be absent at this stage. As Section 3.1 already mentioned, there are simply no adjectival participles derived from intransitive non-mutative intransitive verbs at stage I which could be used as the input for rule (32); cf. the discussion of (29). This accounts for the fact that perfect-tense constructions with these non-mutative intransitive verbs only arise in the next stage (and with the verb HAVE, not BE).

We have seen that the perfect-tense constructions that came into being during stage II refer to eventualities with two distinguishing properties: they are fully actualized, which is the meaning contribution of perfect tense itself, and they evoke a state transition of their theme argument, which is the meaning contribution of the Aktionsart of the VP headed

<sup>19</sup> I refer the reader to Wegner (2019a/2019b) for extensive reviews of various proposals. I fully agree with his forceful defense of the claim that Germanic past and passive participles should be treated as formally (in his terms: syntactico-semantic) identical, although the specifics of his analysis of passive and perfect-tense constructions are quite different from what I have in mind; I intend to return to this issue in future work.

by the participle. This can be represented as in the cognitive representation in Figure 14, in which the continuous line refers to the eventuality and the broken line refers to the state resulting from its complete actualization; note in passing that this representation now goes beyond being a pure tense representation by including information about Aktionsart. The representation in Figure 14 contains all the ingredients needed for distinguishing the  $\exists$ -perfect and the R-perfect reading: the completed eventuality  $k$  is the core ingredient of the  $\exists$ -perfect, while the result state is the core ingredient of the R-perfect. The choice between the two readings thus simply depends on the question as to whether the discourse focuses on the eventuality as such, or on its result; the focus of the discourse is indicated by the ellipses in the figure.

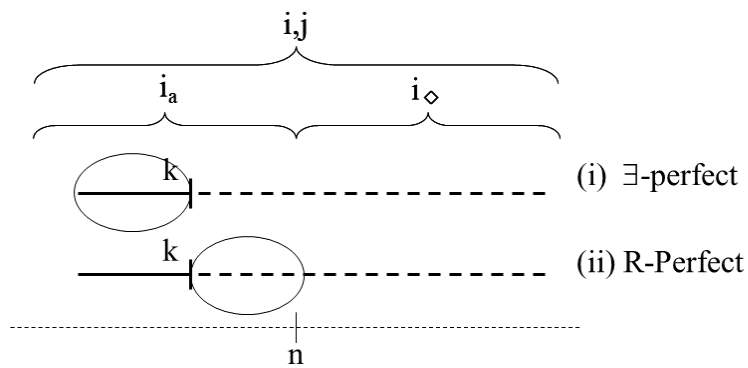


Figure 14: Present-perfect tense constructions (stage II)

The representation in Figure 14 has two other properties worth mentioning. First, it accounts for the fact that R-perfect constructions refer to states that still hold at speech time  $n$ , as this is a constituting part of the speaker's deictic center: if the state does no longer hold at  $n$ , the speaker can only see a completed eventuality without any obvious "current relevance". The additional current-relevance restriction on the R-perfect reading thus accounts for the fact that the  $\exists$ -perfect reading has become the default reading of the present perfect. Second, the current-relevance restriction on the R-perfect reading also provides an explanation for the observation that the use of a time adverb like *gisteren* 'yesterday' strongly disfavors the R-perfect reading, as this adverb refers to a time span excluding speech time  $n$ . The two Dutch examples in (33), for instance, differ in that the former seems more apt for expressing the speaker's confidence that he is sufficiently prepared for his exam than the latter (which will become even more evident when we replace *gisteren* by *verleden jaar* 'last year').

- (33) Ik ben goed voorbereid op mijn examen, want ...  
 I am well prepared for my exam because  
 a. ... ik heb de opgegeven literatuur bestudeerd.  
     I have the specified literature studied  
     '... I have studied the specified literature.'  
 b. ... ik heb gisteren de opgegeven literatuur bestudeerd.  
     I have yesterday the specified literature studied  
     '... I studied the specified literature yesterday.'

The fact that time adverbs like *gisteren* ‘yesterday’ disfavor the R-perfect reading, in tandem with the fact that the default  $\exists$ -perfect reading often refers to more or less the same situation as the simple past (see fn. 5), may be the beginning of a novel explanation of the so-called present-perfect puzzle, i.e. the fact that English differs from the other Germanic languages in categorically blocking such adverbs in the present perfect, on the assumption that the English tense system has the language-specific property that it is more speech-time oriented than those in the other Germanic languages. I will leave elaborating this suggestion for some other occasion.

### 3.3 *The third stage in the development of the Germanic perfect tense*

In the modern Germanic languages, there are few restrictions on the formation of perfect-tense constructions, and it is certainly not the case that intransitive non-mutative verbs are excluded from them. In earlier descriptions this was accounted for by assuming that such perfect-tense constructions have come into being by analogy: cf. Dal and Eroms (2014: §92). Broekhuis (2021) takes this to mean that the verbal system was made more transparent by the introduction of yet another morphological rule that derives verbal participles from simple verbs, that is, the rule which is still productive in many present-day Germanic language. Example (34) provides the Dutch version of this rule.

- (34)  $V_{\text{stem}} \rightarrow [V\text{-affix}]_{\text{participle}}$ ; omit external argument (if present)
- a.  $\text{OPEN}_V (\text{Agent}, \text{Theme}) \rightarrow \text{GEOPEN}_V (\text{Theme})$
  - b.  $\text{SLAAP}_V (\text{Agent}) \rightarrow \text{GESLAPEN}_V$

Example (34a) shows that on the assumption that the new morphological rule deletes the external argument of the input verb, the output for transitive verbs is identical to the output of the older rule in (32), while (34b) shows that it enables the creation of past participle for intransitive non-mutative verbs such as *slapen*. The fact that the scope of rule (34) is wider than that of (32) can be held responsible for the fact that the latter is no longer active in present-day Dutch; it is generally assumed that standard Dutch productively derives past participles from the stem of weak verbs by means of the discontinuous suffix *ge-...d/t*; cf. Haeseryn et al. (1997ff.), De Haas and Trommelen (1993: 324ff.), Booij (2002: 57ff.), and many others.<sup>20</sup>

The introduction of rule (34) not only lifts the earlier restrictions on the verb types that could enter the perfect-tense constructions but it also extends the range of meanings that could be expressed by present-perfect constructions. Recall that in stage II perfect-tense constructions entail a termination point of the eventuality (preceding speech time *n* by default), at which the theme argument undergoes a state transition (see Figure 14). However, this no longer holds for present-perfect constructions with non-mutative verbs: the participle simply denotes a non-mutative eventuality *k* bounded within its present *j*. The boundaries of the eventualities precede *n* by default but can also be located elsewhere, as was already discussed in Section 2.

<sup>20</sup> The specific form of the present-day productive rule must have been established at some later date because many past participles derived from intransitive non-mutative verbs are irregular in form, as is clear from the fact that *geslapen* in (34b) has the ending *-en*.

For our present purpose, it should be noted that the formation of participles from non-mutative verbs introduces a third use of the present perfect into the languages. The discussion of Figure 14 in Section 2.3 has shown that present-perfect constructions with mutative verbs allow an  $\exists$ -perfect reading when the focus is on the eventuality itself and an R-perfect reading when the focus is on the result state. The introduction of perfect-tense constructions with non-mutative verbs now introduces the  $\forall$ -perfect reading; they have an  $\exists$ -perfect reading when eventuality  $k$  is terminated before  $n$ , but an  $\forall$ -perfect reading when the eventuality includes  $n$ . The two uses are depicted in Figure 15, where the dots indicate the range of allowable termination points of the eventuality on the universal reading; the circles indicate the two relevant points mentioned above.

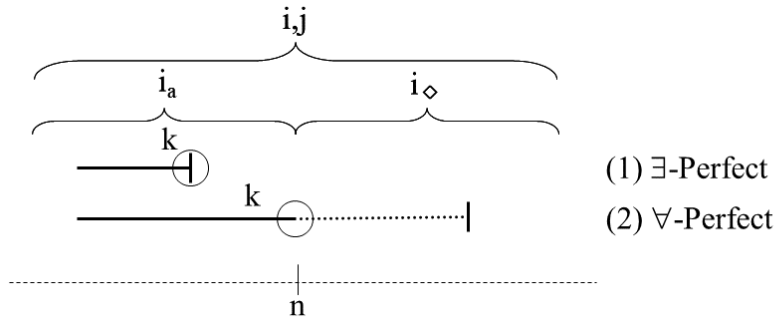


Figure 15: Perfect-tense constructions with non-mutative verbs (stage II)

### 3.4 Summary

The difference in use of the perfect tense with mutative and non-mutative predicates is related to two things: (i) mutative but not non-mutative eventualities allow for a R-perfect reading because only the completion of the former induces a state transition of the theme argument; (ii) non-mutative but not mutative eventualities allow for a  $\forall$ -perfect reading because only the former have the subinterval property. Both mutative and non-mutative eventualities occur with the  $\exists$ -perfect reading as their default. This concludes the discussion of the central research question of this article, i.e. how the three uses of the present perfect in (1a-c) can be derived from the unique meaning of the present perfect attributed to it in a binary-tense approach, i.e. completion of the eventuality within the present-tense domain  $i$ .

## 4 Conclusion

This article develops an account of the uses of the present perfect in (1), repeated here as (35), in the binary-tense approach developed in Te Winkel (1866), Verkuyl (2008; in progress) and Broekhuis and Verkuyl (2014).

- (35) The four major uses of the present perfect:
- a. **Universal perfect** ( $\forall$ -perfect): the eventuality holds throughout some time interval beginning at a certain point preceding speech time until (at least) speech time: *John has lived in Berlin since 1999* implies that John still lives in Berlin at speech time.
  - b. **Existential perfect** ( $\exists$ -perfect): the eventuality has occurred at least once before speech time: *John has read this book (twice)*; *John has lived in Berlin*.

- c. **Perfect of result** (R-perfect): the eventuality has led to a state transition and the result state holds at speech time: *John has arrived in New York* implies that John is in New York at speech time.
- d. **Perfect of recent past** (Hot news): the eventuality has occurred (shortly) before speech time and the addressee is not aware of that fact yet: *John has just left*.

We have seen that the readings in (35a-c) can be represented by means of the first three cognitive representations in Figure 16; two readings were added which have received little attention in the tense literature so far.

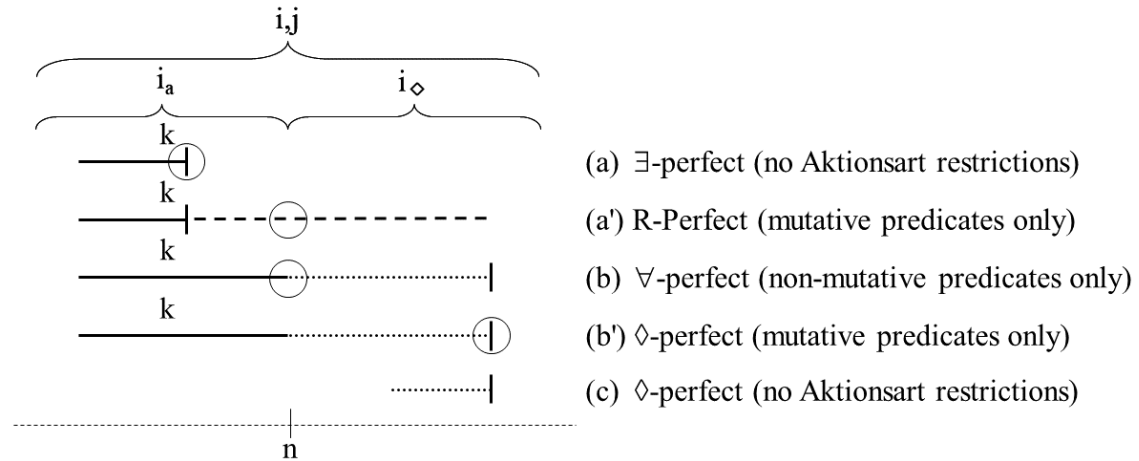


Figure 16: The uses of the present perfect (summary)

The binary-tense approach allows eventuality  $k$  to precede, include or follow speech time  $n$ , as in respectively the (a), (b) and (c)-examples; see also Figure 10. Present-perfect utterances are normally interpreted such that  $k$  precedes  $n$ ; this results in the  $\exists$ -perfect reading in Figure 16a, in which the relevant point of evaluation, the completion of  $k$ , is indicated by a circle. Mutative eventualities are special, however, in that they also allow the R-perfect reading when the speaker focusses on the result state of  $k$  at  $n$ ; this point of evaluation is again indicated by a circle in Figure 16a'. This option does not arise in the case of non-mutative eventualities, as their termination simply does not result in a state transition.

When eventuality  $k$  includes speech time, present-perfect constructions with non-mutative predicates give rise to the  $\forall$ -perfect reading, as they can be evaluated at  $n$  with respect to the actualized part of  $k$ , due to the subinterval property of the predicate; the point of evaluation is indicated by a circle in Figure 16b. As mutative predicates lack the subinterval property, they can only be evaluated after complete actualization of  $k$  (the first available evaluation point is indicated by a circle in Figure 16b'), and therefore receive a  $\Diamond$ -perfect reading.

Observe that Figure 16b' differs from the  $\Diamond$ -perfect reading in Figure 16c only in that the left boundary of  $k$  precedes  $n$ . When we assume that  $\Diamond$ -perfects do not impose any restrictions on the left boundary of  $k$ , the two cases can probably be unified as special instantiations of a single category.

English differs from the other Germanic languages in that it is speech-time oriented, i.e. has a preference for taking speech time  $n$  as the evaluation time; this gives rise to the property that has become known as the present-perfect puzzle, which is that

English present-perfect constructions cannot be modified by time adverbials such as *yesterday* as they do not include *n*.

This article shows that the three readings in (35a-c) find a natural place within the binary-tense approach; they can be derived by appealing to independently motivated aspectual properties of predicates and more or less standard pragmatic reasoning. I have said little about the perfect-of-recent-past (hot news) reading in (35d), apart from agreeing with McCawley (1981) that it should be seen as a special instantiation of the  $\exists$ -perfect reading. To make this more specific, one may think of it as a case in which eventuality *k* is close to *n*, so that the speaker may have good reason to think that the addressee is not yet aware of the current situation.

**Acknowledgments:** The material in this paper was discussed with Henk Verkuyl, which has led to various improvements in the argumentation. I am grateful for his generous help, especially since I know that he prefers handling the problems at hand in a more radical semantic approach; see Verkuyl (in progress). Frits Beukema has done the reader a big favor by improving the presentation of this paper. All the usual disclaimers apply.

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