

# Decomposing (non-)interrogative ‘how’-clauses A case study on Dutch

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## 1. Introduction

Homonymy is a characteristic phenomenon of human language. Natural languages have words that have different meanings but share the same pronunciation.<sup>1</sup> Some illustrations are given in (1):

- (1) a. A bear<sub>1</sub> can bear<sub>2</sub> very cold temperature.  
b. You will feel well<sub>1</sub> after drinking water from this well<sub>2</sub>.

For each of these examples, which involve so-called content words, it is clear that the two homonymous strings represent different words (i.e. ‘listemes’; Borer 2005) in the lexicon. In (1a), for example, *bear*<sub>1</sub> is related to the wild furry animal, while *bear*<sub>2</sub> is related to the ability to endure something. There does not seem to be any meaningful connection between the two homonymous elements, which makes it plausible that they represent two different words in the mental lexicon of an English speaker.

If we follow the classification of parts of speech as found in traditional grammar, homonymy is also found in the realm of so-called function words. Some illustrations can be found in (2):

- (2) a. *Who*<sub>1</sub> knows the man *who*<sub>2</sub> killed his neighbor?  
b. Bill was happy *as*<sub>1</sub> he received the same grade *as*<sub>2</sub> the smartest student in his class.

According to traditional grammar, *who*<sub>1</sub> and *who*<sub>2</sub> in (2a) belong to different pronominal classes, *who*<sub>1</sub> being an interrogative pronoun, and *who*<sub>2</sub> being a relative pronoun. The elements *as*<sub>1</sub> and *as*<sub>2</sub> in (2b) are also treated as different words in the lexicon, *as*<sub>1</sub> being a subordinating conjunction carrying the meaning ‘because of’, and *as*<sub>2</sub> being an adverb with a degree function.

Another fine illustration of the ubiquity of homonymy in the realm of function words comes from Dutch. As shown in (3), the wh-word *wat* ‘what’ can have a great variety of meanings.

- (3) a. Jan heeft *wat* gedronken. ( *wat* = indefinite pronoun, ‘something’ )  
Jan has WAT drunk  
‘Jan drank something.’  
b. Jan heeft *wat* water gedronken. ( *wat* = quantifier, ‘a bit of’ )  
Jan has WAT water drunk  
‘Jan drank something.’

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<sup>1</sup> Specifically, they have the same I-sound (i.e. mental phonological representation) in the sense of Chomsky’s (2000) notion of I-language. See Chomsky (2000:181) for the notion of I-sound in the context of homonymy. It is the I-sound representation that gets externalized in speech.

- c. *Wat* heeft Jan gedronken? (wat = interrogative pronoun, ‘what?’)  
 WAT has Jan drunk  
 ‘What did Jan drink?’
- d. *Wat* heeft Jan een bier gedronken! (wat = exclamative marker)  
 WAT has Jan a beer drunk  
 ‘Jan drank so much beer!’
- e. Alles *wat* zij maakt smaakt. (wat = relative pronoun)  
 all WAT she makes tastes  
 ‘Every meal she prepares tastes great.’

In traditional grammar, each meaning is associated with a different part of speech. In other words, each of the instances of *wat* in (3) corresponds to a different lexical item in the Dutch lexicon. Thus, based on the examples in (3), Dutch would have five different lexical items *wat*, which happen to have the same pronunciation.

Rather than interpreting the multifunctionality of *wat* in (3) as a lexical matter, several linguistic studies have argued that there is only a single lexical item *wat* in the Dutch lexicon, and that the multifunctionality of *wat*—that is, its different semantic readings—is a consequence of the different structural environments in which *wat* appears (Postma 1994, Bennis 1995, Bennis *et al* 1998, Barbiers *et al* 2009).<sup>2</sup> For example, when *wat* is *in situ*, it gets an indefinite reading, namely ‘something’, as in (3a); when *wat* acts as a modifier within a noun phrase, as in (3b), it gets a quantificational reading, namely ‘some/a bit of’; when *wat* occupies the specifier position of an interrogative C(omplementizer) head (i.e., C<sub>Q</sub>), it gets an interrogative reading. In short, it is the structural configuration in which the (lexically unique) functional category *wat* appears that determines (part of) its meaning.<sup>3</sup> Crucially, from the perspective of the mental lexicon, there is no homonymy in (3); there is only a single function word *wat*.<sup>4</sup>

This chapter focuses on another instance of apparent homonymy in the realm of Dutch wh-words, namely the wh-element *hoe* ‘how’. This lexical item is most familiar from its use in interrogative sentences like (4a), which is an interrogative root sentence, and (4b), which is an embedded interrogative clause:

- (4) a. *Hoe* wilde Jan het probleem oplossen?  
 how wanted Jan the problem solve  
 ‘How did Jan want to solve the problem?’
- b. Ik vroeg [*hoe* Jan het probleem wilde oplossen].  
 I asked how Jan the problem wanted solve  
 ‘I asked how Jan wanted to solve the problem.’

<sup>2</sup> See Cheng (1997) for Chinese, and Hachem (2015) for German and Dutch.

<sup>3</sup> This reductionist strategy has been used at various places in the history of generative linguistics. Postal (1966), for example, points out the homonymy of definite articles and direct object clitics in languages such as French: *les<sub>1</sub> filles* ‘the girls’ and *Je les<sub>2</sub> ai vus* (I them have seen, ‘I saw them’). He argues that *les<sub>1</sub>* and *les<sub>2</sub>* instantiate the same category, viz., D. Another illustration comes from Emonds (1976), who points out that the “adverb” *fast*, as in *John drove too fast for me*, and the adjective *fast*, as in *John is too fast for me*, actually instantiate one and the same category, viz. A(djective).

<sup>4</sup> The function word *wat* is homonymous with the content word *wat*, meaning ‘cotton-wool’, as in *Er zit wat wat op je wang* (there sits some cotton-wool on your cheek, ‘There is a bit of cotton-wool on your cheek’).

The element *hoe* in (4) is traditionally classified as an interrogative adverb with a manner interpretation ('in what way?'). Besides the wh-interrogative use of *hoe*, there is also the use in (5); (5a) drawn from Overdiep (1936:598-599), (5b) from Geerts *et al* (1999).<sup>5</sup>

(5) a. In hun haast merkten de jongens niet eens op *hoe* daar in de verte  
 in their haste noticed the boys not even PRT how there in the distance

twee mannen naderden.

two men approached

'Being hasty, the boys didn't see two men approaching from the far distance.'

b. Jan vertelde *hoe* 's nachts een wolf in de schaapskooi was gekomen en  
 Jan told how at-night a wolf in the sheep-fold had entered and

zeven schapen had gedood.

seven sheep had killed

'Jan told about a wolf's entering the sheep-fold and killing seven sheep.'

Clearly, in these examples, *hoe* does not carry the interrogative meaning 'in what way?'. Overdiep (1936:598-99) notes that *hoe*'s interrogative meaning has become 'blurred' (Dutch: *vervaagd*) and that *hoe* in (5) behaves like the conjunction *dat* 'that', which typically introduces finite clauses, as in *In hun haast merkten de jongens niet eens op dat daar in de verte twee mannen naderden*, which is the same clause as (5a) except for the use of *dat*.

In line with Overdiep (1936), Geerts *et al* (1999) classify the non-interrogative *hoe* in (5) as a 'conjunctive adverb' (Dutch: *voegwoordelijk bijwoord*). According to this classification, interrogative *hoe* in (4) and conjunctive *hoe* in (5) are different lexical items having the same pronunciation. In short, these are homonymous items according to traditional grammar.

Just as with the wh-word *wat*, the question arises as to whether the two instances of *hoe* — that is, interrogative *hoe* (4) and non-interrogative *hoe* (5) — can be reduced to a single lexical item, with its exact meaning being determined by the structural configuration in which *hoe* is embedded. My answer to this question will be affirmative. More specifically, this chapter aims to show the following about "the grammar of *hoe*": Firstly, the linguistic expression *hoe* is not a simplex syntactic object of the categorial type 'adverb' but rather a structurally organized nominal phrase headed by the silent root WAY. Secondly, the nominal expression *hoe* can have different base positions: interrogative *hoe* has the complement position of P as its base position and functions as an argument of P; non-interrogative *hoe* has the specifier position of C(omplementizer) as its base position and functions as a 'range assigner' in the sense of Borer (2005). The fact that *hoe* can have different base positions accounts for its multifunctionality. Thirdly, interrogative *hoe* and non-interrogative *hoe* display symmetric

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<sup>5</sup> See also Overdiep (1935) for a brief discussion of non-interrogative *hoe* in 17<sup>th</sup> century Dutch. Overdiep characterizes the phenomenon as the weakening (Dutch: *verzwakking*) of the interrogative meaning of *hoe*. One of the illustrations he gives, is given in (i):

(i) Sy voelt *hoe* dit gevoel allencxen grooter wert. (Cats 888<sup>b</sup>; 17th century Dutch)  
 she felt how this sentiment gradually bigger became  
 'She felt this sentiment getting bigger and bigger.'

For recent discussion of the non-interrogative *hoe*-pattern in present-day Dutch, see Nye (2012, 2013a,b).

behavior in the sense that *hoe* must always undergo displacement to the specifier position of a PP: interrogative *hoe* moves within the adverbial PP, from the complement position of P to the specifier position of P; non-interrogative *hoe* moves from [Spec,CP] to the specifier position of a “conjunctive” P. Fourthly, just like non-interrogative *hoe*, interrogative *hoe* —a PP whose specifier position is occupied by the nominal expression *hoe*— moves to the specifier position of a “conjunctive” P. In the case of non-interrogative *hoe*, conjunctive P is specified as [+realis], in the case of interrogative *hoe*, conjunctive P is specified as [-realis]. The latter P typically surfaces as *of*. The grammar of interrogative *hoe* and that of non-interrogative *hoe* is summarized in (6a,a’) and (6b), respectively. Importantly, my discussion of the two types of complement clauses will be embedded in a broader discussion of the syntax of complement clauses and adjunct clauses in Dutch.

- (6) a. ... [PP Spec [P' of<sub>[-realis]</sub> [CP Spec [C' C [TP ... [PP *hoe* [P' P [~~hoe~~]]] ... ]]]]]  
 a.' ... [PP [<sub>PP</sub> *hoe* [P' P [~~hoe~~]]] ] [P' of<sub>[-realis]</sub> [CP Spec [C' C [TP ... PP<sub>hoe</sub>. ... ]]]]]  
 b. ... [PP *hoe* [P' P<sub>[+realis]</sub> [CP ~~hoe~~ [C' C [TP ..... ]]]]]

This chapter is organized as follows: In section 2, it is shown that *hoe*<sub>E</sub>-complements typically present a process as ongoing. Section 3 focusses on the different grammatical behavior of *hoe*<sub>E</sub>, on the one hand, and *hoe*<sub>Q</sub>, on the other hand. Their contrastive behavior is interpreted as evidence for different syntactic derivations of the two patterns. Specifically, *hoe*<sub>E</sub> is base-generated in the left periphery, *hoe*<sub>Q</sub> is moved from a clause-internal position to the clausal left periphery. Section 4 aims to show that, even though conjunctive *hoe*<sub>Q</sub> and adverbial *hoe*<sub>E</sub> look like simplex lexical atoms at the surface, they have a phrasal structure. It is proposed that they are nominal expressions, and that *hoe*<sub>Q</sub> is a nominal expression that occupies [Spec,PP] as a result of PP-internal movement. In section 5, it is proposed, on the basis of various types of adjunct clauses, that conjunctive adverbs should be analyzed as “range-assigning” nominal expressions that originate as specifiers in the CP-domain and undergo displacement to the specifier-position of the PP in which CP is embedded. In section 6, it is proposed that such range-assigning nominal expressions are also found in the specifier position of complement clauses, *hoe*<sub>E</sub> being one example. In section 7, it is shown, on the basis of interrogative *of* ‘if/whether’ clauses, that the Dutch complementizer system consists of a CP-layer (hosting nominal range-assigners) and a higher PP-layer. The latter can be headed by P<sub>[-realis]</sub>, which can surface as *of*, or by P<sub>[+realis]</sub>, which remains silent. It is proposed that *hoe*<sub>Q</sub> undergoes displacement to P<sub>[-realis]</sub>, while *hoe*<sub>E</sub> is moved to P<sub>[+realis]</sub>. Section 8 concludes this chapter.

## 2. Some introductory remarks on eventive *hoe*-complements

Just like any other language, Dutch makes a formal distinction between embedded declarative clauses and embedded Y(es)/N(o)-interrogative clauses. The former are introduced by the subordinator *dat* ‘that’ (7a), while the latter start with the subordinator *of* ‘whether/if’ (7b).

- (7) a. Ik vertelde aan Jan [*dat* de studenten het probleem hadden opgelost].  
 I told to Jan that the students the problem had solved  
 ‘I told Jan that the students had solved the problem.’  
 b. Ik vroeg aan Jan [*of* de studenten het probleem hadden opgelost].  
 I asked to Jan whether the students the problem had solved  
 ‘I asked Jan whether the students had solved the problem.’

As shown in (8a), interrogative clauses can also be introduced by a wh-word, such as the wh-word *hoe* ‘how’, which typically has a manner interpretation. In (8a), for example, *hoe* asks for the way in which the students solved the problem. As indicated, *hoe* originates in a clause-internal position, where it fulfills its role as a VP-modifier, and ends up in the clausal left periphery as a result of movement. For the sake of completeness, I added example (8b), which represents a Y/N-interrogative clause containing the manner-adverbial expression *snel en adequaat* ‘fast and adequately’. Note that, as opposed to interrogative *hoe*, the non-interrogative manner-adverbial occupies a clause-internal position.

- (8) a. Ik vroeg aan Jan [*hoe* zij het probleem ~~*hoe*~~ hadden opgelost].  
 I asked to Jan how they the problem had solved  
 ‘I asked Jan how they had solved the problem.’
- b. Ik vroeg aan Jan [*of* zij het probleem *snel en adequaat* hadden opgelost].  
 I asked to Jan whether they the problem fast and adequately had solved  
 ‘I asked Jan whether they had solved the problem fast and adequately.’

Interestingly, the wh-element *hoe* can also introduce an embedded clause that has a declarative interpretation instead of an interrogative one. This non-interrogative use of the wh-element *hoe* is exemplified in (9); see also (5).

- (9) Ik vertelde aan Jan [*hoe* de studenten het probleem *snel en adequaat* oplosten].  
 I told to Jan how the students the problem fast and adequately solved  
 ‘Jan told about the students’ quickly and adequately solving the problem.’

Observe that *hoe* in this non-interrogative clause cannot be interpreted as a modifier that specifies the manner in which the eventuality (*in casu*, the students’ solving the problem) was performed; this for the reason that the linguistic expression *snel en adequaat* already fulfills this modifying role within the VP.

As noted by Umbach *et al* (2021) for the German equivalent of the *hoe*-complement in (9), the non-interrogative *hoe*-complement in (9) has a process-like character.<sup>6</sup> Specifically, it is imperfective in the sense of presenting a process as ongoing. In (9), the ongoing process consists of the various stages that the students went through while trying to find a solution for the problem. As noted by Umbach *et al*, these stages can be qualified as being ‘similar’ in the sense of representing possible natural continuations of the initial (problem-solving) stage. Thus, in (9), these stages correspond to the (temporal) sequence of actions that the students undertook for finding a solution to the problem. Following Umbach *et al*, I will henceforth call the non-interrogative *hoe*-element in (9) ‘eventive *hoe*’ (abbreviated: *hoe<sub>E</sub>*). The interrogative *hoe*-element in (8a) will be represented as *hoe<sub>Q</sub>*, where ‘Q’ stands for ‘question’.

Having given a brief characterization of the meaning of *hoe<sub>E</sub>*-complements, I will now turn to some evidence in support of their process reading. This evidence comes from the contrastive behavior of verbs denoting an activity and verbs denoting a state.<sup>7</sup> The former can

<sup>6</sup> An example of a non-interrogative *wie*-complement in German is given in (i):

(i) Anna sah, *wie* Berta schnell ihre Tasche packet (Umbach *et al* (2021); ex. (9))  
 Anna saw how Berta quick her bag packed  
 ‘Anna saw Berta quickly packing her bag.’

<sup>7</sup> See also Clement (1971), Vater (1975), and Falkenberg (1989), Umbach *et al* (2021) for German. All these authors point out that eventive *wie*-complements, as opposed to *dass* ‘that’ complements, highlight the process of the described event and block stative verbs. For Dutch, see Nye (2012, 2013a,b).

be part of a *hoe<sub>E</sub>*-complement, the latter cannot. A first illustration of this contrast comes from the minimal pair in (10):

- (10) a. De bakker voelde [dat<sub>Decl</sub>/hoe<sub>E</sub> hij makkelijk door het brood heen *sneed*]. (activity)  
 the baker felt that/how he easily through the bread PRT cut  
*dat<sub>Decl</sub>*: ‘The baker felt/noticed that he could cut through the bread easily.’  
*hoe<sub>E</sub>*: ‘The baker felt himself cutting the bread easily.’
- b. De bakker voelde [dat<sub>Decl</sub>/\*hoe<sub>E</sub> het brood makkelijk *sneed*]. (state)  
 the baker felt that/how the bread easily cut  
*dat<sub>Decl</sub>*: ‘The baker felt/noticed that the bread cuts easily’

(10a) shows that *hoe<sub>E</sub>* can occur in an active clause involving an agentive subject (*hij*), but not in a Middle-clause like (10b), which typically refers to an individual property of the subject and denotes a state (Broekhuis *et al* 2015). As indicated, both active *snijden* ‘cut’ and stative *snijden* can be part of a clause introduced by the declarative subordinator *dat* ‘that’. In line with what was noted earlier, the *hoe<sub>E</sub>*-complement in (10a) has a process-like reading, *in casu* the sequence of ‘cutting stages’ during the cutting of the bread. When *dat* introduces the embedded clause, the event (i.e., the baker’s cutting of the bread) is not presented “from the inside” as an ongoing event consisting of ‘cutting stages’. The *dat*-clause simply states the fact that the baker cut through the bread easily.

A second piece of evidence which supports the process reading of *hoe<sub>E</sub>*-complements comes from clauses featuring the verb *wegen* ‘to weigh’. As shown in (11), *hoe<sub>E</sub>* can occur with measure verbs denoting an activity (11a), but not with measure verbs denoting a state (11b).

- (11) a. Jan zag [dat<sub>Decl</sub>/hoe<sub>E</sub> de boer het varken zorgvuldig aan het *wegen* was]. (activity)  
 Jan saw that/how the farmer the pig painstakingly on the weighing was  
*dat<sub>Decl</sub>*: ‘Jan saw that the farmer was weighing the pig painstakingly.’  
*hoe<sub>E</sub>*: ‘Jan saw the farmer weighing the pig painstakingly.’
- b. Jan zag [dat<sub>Decl</sub>/\*hoe<sub>E</sub> het varken 100 kilo *woog*]. (state)  
 Jan saw that /how the pig 100 kilo weighed.  
*dat<sub>Decl</sub>*: ‘Jan saw that the pig weighed 100 kilo.’

In (11a), the measure verb *wegen* combines with a subject carrying the semantic role Agent (*de boer*) and a direct object carrying the semantic role Theme (*het varken*). When the embedded clause is introduced by the subordinator *dat*, the activity represented by the embedded clause is presented as a fact. When it is introduced by *hoe*, however, the activity is presented as an ongoing process comprising various stages of the weighing process. As shown in (11b), *hoe<sub>E</sub>* is impossible when it introduces a clause featuring the stative verb *weigh*, which takes a measure phrase (100 kilo) as its complement and combines with a subject noun phrase carrying the semantic role *Theme*. As indicated, such a clause denoting a stative event can only be introduced by the subordinator *dat*.

A third argument in support of the process reading of *hoe<sub>E</sub>*-complements is based on the examples in (12), in which the embedded clause is a copular construction. As shown in (12a), *hoe<sub>E</sub>* can occur with the copular verb *worden* ‘to become/get’, which denotes a change of state (process), but not with the non-dynamic copula *zijn* ‘to be’, which denotes a state; see (12b).

- (12) a. Jan zag [dat<sub>Decl</sub>/hoe<sub>E</sub> de ballon langzaam kleiner werd]. (change of state/dynamic)  
 Jan saw that/how the balloon slowly smaller became  
*dat<sub>Decl</sub>*: ‘Jan saw that the balloon slowly got smaller.’  
*hoe<sub>E</sub>*: ‘Jan saw the balloon slowly getting smaller.’
- b. Jan zag [dat<sub>Decl</sub>/\*hoe<sub>E</sub> de ballon rood was]. (state)  
 Jan saw that/how the balloon red was  
*dat<sub>Decl</sub>*: ‘Jan saw that the balloon was red.’

Let me, finally, point out that the verbs in (10a), (11a), and (12a), which are part of the *hoe<sub>E</sub>*-complement, can all be used in the Dutch progressive construction: *aan het V<sub>[+infinitive]</sub> + zijn*. Stative verbs cannot be used in this construction. This contrast is exemplified in (13) on the basis of the copular verb *worden* ‘to become’, which has a dynamic reading (i.e. change of state), and the copular verb *zijn*, which has a stative reading.

- (13) a. Jan zag [dat<sub>Decl</sub> de ballon langzaam kleiner *aan het worden was*]. (dynamic)  
 Jan saw that the balloon slowly smaller Prep. the<sub>neuter</sub> become was  
 ‘Jan saw that the balloon was slowly getting smaller.’
- b. \*Jan zag [dat<sub>Decl</sub> de ballon rood *aan het zijn was*]. (state)  
 Jan saw that the balloon red Prep. the<sub>neuter</sub> be was  
 \*Jan saw that the balloon was being red.’

In summary: the Dutch wh-word *hoe*, just like its equivalent in many other languages (cf. Umbach *et al* 2021), can be used as an interrogative adverb carrying the meaning ‘in what way’, or as a conjunction-like element with a non-interrogative interpretation. The clause introduced by this non-interrogative *hoe* typically presents a process as ongoing, which implies that the process comprises various stages that take place sequentially. Having introduced some basic meaning properties of *hoe<sub>E</sub>*-complements, I will next address the question as to how *hoe<sub>E</sub>* and *hoe<sub>Q</sub>* end up in the left periphery of the finite clause.

### 3. *Hoe<sub>Q</sub>* as a displaced phrase, *hoe<sub>E</sub>* as a base-generated phrase.

So far, we have seen that *hoe<sub>Q</sub>* and *hoe<sub>E</sub>* occupy a syntactic position in the left periphery of the clause. The question, obviously, arises as to how they end up in this position. Specifically, is the same type of computational operation involved in their left-peripheral placement? In line with earlier studies (e.g. Chomsky 1986, Frey 2003), I propose that *hoe<sub>Q</sub>* starts out as a VP-modifier and undergoes displacement (in minimalist terms: I-Merge) to a specifier position in the so-called complementizer system. *Hoe<sub>E</sub>*, on the contrary, is taken to be base-generated in the left periphery of the clause (cf. Legate (2010) for English *how*, Nye (2012) for English *how*/Dutch *hoe*, and Umbach *et al* (2021) for German *wie*).<sup>8</sup> In what follows, I will give a number of arguments in support of the different derivational processes underlying *hoe<sub>Q</sub>*-complements, on the one hand, and *hoe<sub>E</sub>*-complements, on the other hand. As will become clear, the two types of *hoe* display different grammatical behavior, which is expected if they have a different underlying syntax.

A first point of contrast—one already mentioned briefly in section 2; see (9)—regards the possibility of co-occurring with a clause-internal manner-adverbial (see Umbach *et al* (2020) for German). As shown in (14a), *hoe<sub>Q</sub>* cannot co-occur with a clause-internal manner adverbial,

<sup>8</sup> In the course of this chapter, it will be claimed that *hoe<sub>E</sub>*, even though being base-generated in the left periphery of the clause, makes a small movement step within a more articulated complementizer system. See the end of section 7.

while *hoe<sub>E</sub>* can. This contrast follows if *hoe<sub>Q</sub>* and the *in situ* manner adverbial (*vriendelijk*) compete for the same base position, and if *hoe<sub>E</sub>* and the *in situ* manner-adverbial do not.

- (14) a. Zij vroeg *hoe<sub>Q</sub>* ik de buurman (*\*vriendelijk*) had aangekeken.  
 she asked how I the neighbor friendly had at-looked  
 'She asked how I had looked at the neighbor (*\*friendly*).'  
 b. Zij vertelde *hoe<sub>E</sub>* ik hem *vriendelijk* had aangekeken en vervolgens was weggerend.  
 she told how I him friendly had at-looked and then had away-run  
 'She told about me looking at him friendly and subsequently running away from him.'

A second contrast concerns the question as to whether *hoe* can be associated with floating material, such as *zoal* 'all' and *nog meer* 'additionally/also', and *in godsnaam* 'for god's sake'. As shown below, *hoe<sub>Q</sub>* can ((15a) and (16a)), but *hoe<sub>E</sub>* cannot ((15b) and (16b)).

- (15) a. Zij vroeg [*hoe<sub>Q</sub>* de artsen mij *zoal/nog meer* behandeld hadden].  
 she asked how the doctors me among-others/in-addition treated had  
 'She asked me in what ways the physicians had treated me among others/additionally.'  
 b. Zij vertelde [*hoe<sub>E</sub>* de artsen mij (*\*zoal/\*nog meer*) zorgvuldig behandelden].  
 she told how the doctors me among-others/in-addition carefully treated  
 'She told about the doctors' treating me carefully.'  
 (16) a. Jan vroeg [*hoe<sub>Q</sub>* wij *in godsnaam* dit probleem hadden opgelost].  
 Jan asked how we for god's-sake this problem had solved  
 'Jan asked how on earth we were able to solve this problem.'  
 b. Jan vertelde [*hoe<sub>E</sub>* wij dit probleem (*\*in godsnaam*) vakkundig hadden opgelost].  
 Jan told how we this problem for god's-sake adequately had solved  
 'Jan told about our solving this problem professionally.'

The dependency between *hoe<sub>Q</sub>* and the clause-internal floating element can easily be accounted for if it is assumed, in the spirit of Sportiche's (1988) analysis of Quantifier floating, that the wh-phrase *hoe<sub>Q</sub>* and the floating element start out as a syntactic unit (e.g. [*hoe<sub>Q</sub>* [*zoal*]]), where *zoal* is adjoined to *hoe<sub>Q</sub>*). Movement of just the wh-phrase *hoe<sub>Q</sub>* leaves behind the floating element (*zoal/nog meer/in godsnaam*). As shown by the b-examples, it is impossible for *hoe<sub>E</sub>* to be associated with floating material. This suggests that *hoe<sub>E</sub>*'s placement in the left periphery of the clause does not result from movement.

A third phenomenon for which the two types of *hoe* display contrastive behavior is syntactic coordination. As opposed to *hoe<sub>Q</sub>* (17a), *hoe<sub>E</sub>* cannot be coordinated with another interrogative wh-phrase (17b).

- (17) a. De patiënt vroeg [*hoe<sub>Q</sub>* en waar<sub>Q</sub>] de arts de naald zou plaatsen.  
 the patient asked how and where the doctor the needle would put  
 'The patient asked where and how the doctor would put the needle.'  
 b. De arts vertelde [*hoe<sub>E</sub>* (*\*en waar<sub>Q</sub>*)] hij de naald voorzichtig in de huid duwde.  
 the doctor told how and where he the needle carefully in the skin put

A fourth difference in grammatical behavior relates to the so-called Inner island effect (Ross 1984). As shown in (18a), *hoe<sub>Q</sub>* triggers an inner island effect. Displacement of *hoe<sub>Q</sub>* across negative adverbs such as *nooit* ‘never’ or *niet* ‘not’ yields an ungrammatical sentence. Note that a non-negative temporal adverb such as *toen* ‘at the time’ can be crossed over by *hoe<sub>Q</sub>*. As shown by (18b), *hoe<sub>E</sub>* can occur in the left periphery of a clause that contains a negative word. Observe that the complement clause in (18b) contains a coordination, where one conjunct represents Jan’s not crossing the river, and the other conjunct Jan’s choosing for a different route. In a way, the conjuncts represent the stages in Jan’s finding his way to a certain destination.

- (18) a. Jan vroeg *hoe<sub>Q</sub>* ik de rivier *toen*/<sup>??</sup>*nooit*/<sup>??</sup>*niet* ~~hoe~~ was overgestoken.  
 Jan asked how I the river at-the-time/never/not was crossed  
 ‘Jan asked me how I had (??never/??not) crossed the river.’
- b. Jan vertelde *hoe<sub>E</sub>* hij de rivier *nooit/niet* overstak en altijd voor een andere route koos.  
 Jan told how he the river never/not crossed and always for a different route chose  
 ‘Jan told about his never crossing the river and always choosing a different route.’

A fifth contrast between *hoe<sub>Q</sub>* and *hoe<sub>E</sub>* concerns scopal interaction with a quantifier (see also Nye (2012)). As illustrated by (19b), there is no scopal interaction between *hoe<sub>E</sub>* and the quantifier *iedereen* ‘everyone’ (19b). The embedded clause introduced by *hoe<sub>E</sub>* represents the process—that is, the various problem solving stages—that everyone went through for finding an efficient solution to the problem. As shown by (19a), *hoe<sub>Q</sub>*, as opposed to *hoe<sub>E</sub>*, does permit two scopal readings: *hoe* can have scope over *iedereen* (meaning: ‘In which (single) way was it that all people solved this problem?’), and *iedereen* can have scope over *hoe* (meaning: ‘As for every individual person, how did s/he solve the problem efficiently?’).

- (19) a. Ik vroeg [*hoe<sub>Q</sub>* *iedereen* dit probleem had opgelost]. how > ∀ / ∀ > how  
 I asked how everyone this problem had solved  
 ‘I asked how everyone had solved this problem.’
- b. Ik vertelde [*hoe<sub>E</sub>* *iedereen* dit probleem *zorgvuldig* had opgelost] how > ∀  
 I told how everyone this problem efficiently had solved  
 ‘I told about everyone’s solving this problem in a efficient way.’

A sixth phenomenon for which *hoe<sub>Q</sub>* and *hoe<sub>E</sub>* display contrastive behavior concerns the possibility of having a long distance reading. As shown in (20a), *hoe<sub>Q</sub>* can get a long distance interpretation; that is, *hoe<sub>Q</sub>* is interpreted as a manner adverb that modifies the event—say, ‘we solve the problem’—in the most deeply embedded clause. This long distance reading of *hoe<sub>Q</sub>* follows from the fact it is connected to the embedded clause via its trace/copy. As shown in (20b), *hoe<sub>E</sub>* does not get a long distance interpretation; that is, *hoe<sub>E</sub>* cannot be interpreted as being part of a clause lower than the matrix clause in which it is contained. Thus, *hoe<sub>E</sub>* in (20b) says something about the process of quickly discovering something but not about the process of our solving the problem accurately. The latter reading is only possible when *hoe<sub>E</sub>* is the beginning of the most deeply embedded clause, as in (20c).

- (20) a. Jan vroeg [*hoe<sub>Q</sub>* zij dacht [dat wij het probleem ~~hoe~~ konden oplossen]].  
 Jan asked how she thought that we the problem could solve  
 ‘Jan asked how she thought we could solve the problem.’

- b. Jan vertelde [*hoe<sub>E</sub>* zij *snel* ontdekte [dat wij het probleem *zorgvuldig* oplosten]]  
 Jan told how she quickly discovered that we the problem accurately solved  
 'Jan told about her quickly discovering that we solved the problem accurately.'  
 (The process = 'quickly discovering something')

Impossible (long-distance reading): 'Jan told that she quickly learned about our accurately solving the problem.' (the process = 'accurately solving the problem')

- c. Jan vertelde [dat zij ontdekte [*hoe<sub>E</sub>* wij het probleem *zorgvuldig* oplosten]]  
 Jan told that she discovered how we the problem accurately solved  
 'Jan told that she learned about our accurately solving the problem.'  
 (The process = 'accurately solving the problem')

A final point of contrast between *hoe<sub>Q</sub>* and *hoe<sub>E</sub>* comes from Sluicing: *hoe<sub>Q</sub>* can occur as a wh-remnant in Sluicing constructions, *hoe<sub>E</sub>* cannot. This contrast is shown in (21).<sup>9</sup>

- (21) a. De arts dichtte de wond. Ik weet alleen nietmeer *hoe<sub>Q</sub>*.  
 the doctor closed the wound I know but not anymore how  
 'The doctor closed the wound but I don't remember how.'

- b. De arts dichtte *zorgvuldig* de wond. \*Marie legde uit *hoe<sub>E</sub>*.<sup>10</sup>  
 the doctor closed carefully the wound Marie explained how

Summarizing, I have shown that *hoe<sub>Q</sub>* and *hoe<sub>E</sub>* display different external syntactic behavior. This different behavior suggests that their syntactic position in the clausal representation is derived in different ways. Specifically: *hoe<sub>Q</sub>* is a phrase that is moved (I-merge) from a VP-internal position to the left periphery of the clause, as in (22a), while *hoe<sub>E</sub>* is a phrase which is base-generated in the left periphery, as in (22b).<sup>11</sup>

- (22) a. Zij vroeg [*hoe<sub>Q</sub>* Jan ~~hoe~~ gekeken had].  
 she asked how Jan looked had  
 'She asked how (e.g. in a strange way) Jan had looked.'

- b. Zij vertelde [*hoe<sub>E</sub>* Jan voorzichtig de deur opende].  
 she told how Jan carefully the door opened  
 'She told about Jan's opening the door carefully.'

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<sup>9</sup> Note that *hoe<sub>E</sub>* behaves similarly to English *whether*, which has the shape of a wh-word but cannot be used as a remnant in sluicing:

(i) \*John said that he would come to the party but, admittedly, I wonder whether.

<sup>10</sup> It should be noted that the sentence is fine when *hoe* has an interrogative-instrumental reading, that is, 'with what tool', as in The doctor closed the wound with a special glue.

<sup>11</sup> This conclusion is in line with earlier proposals, such as Legate (2010) for English, Nye (2012, 2013a,b) for Dutch and English, and Umbach *et al* (2021) German. In this chapter, I won't discuss the English non-interrogative how-pattern (e.g. *I told them how I had once been bitten by a snake*). See Legate (2010) for in-depth discussion of its syntax and semantics.

The question, obviously, arises as to what position in the left periphery of the clause *hoe<sub>Q</sub>* and *hoe<sub>E</sub>* occupy. Is it the same structural position, or do they occupy different positions in the clausal left periphery? Furthermore, in line with what was discussed in section 1, the question arises as to how *hoe<sub>Q</sub>* and *hoe<sub>E</sub>* obtain their specific readings. Is the difference in meaning lexically determined—that is, there are two homonymous lexical items *hoe* in the Dutch lexicon, namely *hoe<sub>Q</sub>* and *hoe<sub>E</sub>*—, or is it the case that there is a single item *hoe* in the lexicon, whose specific meaning depends on the syntactic configuration in which it is located? In trying to find an answer to these questions, I will proceed as follows: In section 4, I will take a closer look at the grammatical nature of the linguistic expression *hoe*. Specifically, is it a primitive lexical atom, or is it a Syntactic Object (SO) with an inner structure? After having argued for the latter perspective on *hoe*, I will discuss in sections 5-7 what this means for the external syntax (i.e. distributional behavior) of *hoe<sub>Q</sub>* and *hoe<sub>E</sub>*.

#### 4. Decomposing adverbs: the inner structure of *hoe* ‘how’.

Although from a surface perspective *hoe* looks like a simplex lexical atom, I aim to show in this section that it has a composite inner organization. Specifically, it will be argued that *hoe* is a nominal phrase. In my quest for inner structure, I will, initially, focus on *hoe<sub>Q</sub>*. In line with the discussion of the wh-phrase *wat* in section 1, I will argue that *hoe<sub>Q</sub>* and *hoe<sub>E</sub>* are not distinct lexical items which happen to have the same pronunciation (homonymy). Rather, *hoe<sub>Q</sub>* and *hoe<sub>E</sub>* are the same type of linguistic expression, viz. a nominal phrase. Their different “grammatical contribution” to the clause relates to the syntactic configuration in which they are embedded.

Let us now turn to the proposal that *hoe<sub>Q</sub>* is not a simplex lexical atom but rather a linguistic expression with a composite syntactic structure. For the origins of this idea, we need to go back to the early days of generative syntax. Ever since Postal’s (1966) seminal study *On so-called “Pronouns” in English*, linguists are aware that linguistic expressions that look like single words (i.e. lexical atoms) at the sound surface may have a more complex hidden structure. Postal, for example, shows that personal pronouns like *he/him* or *we/us* are complex noun phrases featuring an overt determiner, namely *he/him* and *we/us*, which is followed by a silent noun. Thus, the so-called pronoun *he* has the inner structure [*he*<sub>DET</sub> + *ONE*<sub>Noun</sub>], where *he* is a subtype of determiner, closely related to definite articles, and small capital *ONE* the silent noun. Importantly, as Postal points out, in certain environments the noun can appear at the sound surface, as in cases such as *we students*, *you guys*, dialectal forms such as *we ’uns* and *us ’uns*, and reflexive pronouns such as *him-self* and *them-selves*.<sup>12</sup>

Postal (1966) suggests that his decompositional analysis of English pronouns can be extended to adverbs such as *then* (temporal), *there* (locative), and *thus* (manner). Rather than being simplex lexical items of the categorial type ‘adverb’, these pro-forms have an inner structure of the following type: [*then*<sub>DET</sub> [*TIME*<sub>Noun</sub>]], [*there*<sub>DET</sub> [*PLACE*<sub>Noun</sub>]], and [*thus*<sub>DET</sub> [*WAY*]].<sup>13</sup> Given their adverbial function, I will refer to these pro-forms as ‘adverbial pronouns’.

This decompositional approach to adverbs can already be found in Katz and Postal (1964:98), where it is proposed that manner adverbs such as *carefully* derive from underlying adpositional structures of the type [*PP* *IN* + [*NP* *carefully* + *WAY*]], where *IN* is a silent adposition,

<sup>12</sup> For other studies on the decomposition of pronouns, see, among others, Cardinaletti and Starke 1999, Corver and Delfitto (1999), Déchaine and Wiltschko (2002); van Koppen (2005).

<sup>13</sup> See Kayne (2003a; 2004) for extensive discussion of silent nouns. As Kayne (2004) points out, there are reasons for decomposing *there/then/thus* into *th-ere/th-us/th-en*. In the context of this chapter, I will abstract away from this more fine-grained decomposition of these adverbial elements.

*careful* an attributive AP, and *WAY* a silent noun designating manner (see also Emonds 1976).<sup>14</sup> Building on Katz and Postal (1964), Collins (2007) also claims that locative “adverbs” such as *here*, *there*, and *somewhere* involve a silent noun, as in [*here* + *PLACE*].<sup>15</sup> As an additional ingredient of the structural analysis of locative adverbs, he proposes that the silent noun (*PLACE*) is a light nominal expression that must raise to the specifier position of the adpositional phrase (PP), pied piping the rest of the nominal expression.<sup>16 17</sup> Thus, the surface form *there* has the underlying structure in (23a) and the derived structure in (23b):<sup>18</sup>

- (23) a. [PP IN [NP *there* + *PLACE*]]  
 b. [PP [*there* + *PLACE*] [P' IN [~~NP *there* + *PLACE*~~]]]

According to Collins, the non-pronunciation of the (English) adposition follows from a more general version of the Doubly-Filled Comp Filter (Koopman and Szabolcsi 2000; Koopman 2000a). Collins’s formulation of this filter is given in (24):

- (24) a. Edge(X) must be phonetically overt.  
 b. The condition in (a) applies in a minimal way so that either the head or the specifier, but not both, are spelled-out overtly.

In (24a), ‘Edge(X)’ comprises both X (the head) and the specifier of X. As stated in (24b), these two edge components interact with each other as far as spell-out goes.<sup>19</sup>

As Collins points out, it is not just R-pronouns such as *here*, *there*, and *where* that move to [Spec,PP], subsequently triggering non-pronunciation of P. Also nominal expressions headed by the overt light noun *place* can move to [Spec,PP] and trigger P’s silence. This is exemplified in (25), and structurally represented in (26) for the locative expression *someplace different*.<sup>20</sup>

- (25) a. Every three years, we lived *someplace different*.  
 b. He doesn't seem to settle *anyplace* for long, does he?  
 c. Let's go see if he's *someplace obvious*, like at home in bed.

- (26) [PP [NP *someplace different*] [P' AT [~~NP *someplace different*~~]]]

<sup>14</sup> On the status of the adverbial marker *-ly*, see, among others, Emonds (1985), who analyzes *-ly* as an inflection, and Déchaine and Tremblay (1996), Baker (2003), and Corver (2020), who take *-ly* to be a nominal element.

<sup>15</sup> See also see also Kayne (2004), and Capinogro and Pearle (2009) for the claim that “adverbs” such as *here*, *there*, *et cetera* are nominal expressions.

<sup>16</sup> As Collins (2007) points out, a language like Dutch provides clear evidence in support of such PP-internal movement operations. As shown in Van Riemsdijk (1978), certain pronouns move from the complement position of P to the specifier of P, where they turn into what Van Riemsdijk calls R-pronouns, where ‘R’ refers to the *r*-sound that is part of these pronouns: e.g. *daar op* (there on, ‘on that’), *waar op* (where on, ‘on what’), *ergens op* (somewhere on, ‘on something’), *hier op* (here on, ‘on this’). See also Koopman (2000b).

<sup>17</sup> For discussion of light nouns, see Kishimoto (2000). In other studies, different labels are used to refer to this class of “semantically weakened” nouns. Emonds (1985) calls them ‘grammatical nouns’, Corver and Van Riemsdijk (2001) ‘semi-lexical nouns’, Postal (2004) ‘nonchromatic nouns’.

<sup>18</sup> I abstract away here from issues regarding the ban on movement operations that are too local (e.g. from the complement position of X to the specifier position of X). For discussion of so-called ‘anti-locality’, see Grohmann (2003) and Abels (2003).

<sup>19</sup> In the course of this chapter, we will come across a few Spec-head configurations in which both the head and the specifier position are spelled out by overt material. This seems to suggest that condition (24b) is parametrized. Alternatively, one has to assume that there is a more articulated functional structure, so that the materialized specifier and the materialized head are contained in different functional layers.

<sup>20</sup> For discussion of the existence of silent prepositions, see Bresnan and Grimshaw (1978), Larson (1985), McCawley (1988), Emonds (1987).

Collins (2007:4-5) provides some independent empirical support for the proposal that the locative “adverb” *there* involves a silent adposition. His argument is based on the set of examples in (27):

- (27) a. I went there and to the place next door.  
 b. I went \*(to) the place next door.  
 c. ?I went there and the place next door.

In (27a) *there* is coordinated with the directional PP *to the place next door*. If *there* is a PP, then we simply have a coordination of two PPs in (27a): [<sub>ConjP</sub> [<sub>PP</sub> *there*] and [<sub>PP</sub> *to the place next door*]]. Consider next the pair (27b) and (27c). (27b) shows that a bare DP (*the place next door*) is impossible after *went*; the directional P *to* must be present. Interestingly, pattern (27c), featuring a coordination of *there* and a bare DP, is much more acceptable than the bare noun phrase in (27b). This acceptability can only be accounted for if (27c) has the constituent structure in (28a) below. Given the Coordinate Structure Constraint (Ross 1967), the sequence *there and the place next door* cannot result from displacement of just *there* to the specifier position of the silent P *TO*, as in (28b). As Collins points out, (27c) can only be derived if *there* pied pipes the rest of the material contained within the coordinate structure, as in (28c).

- (28) a. [<sub>PP</sub> *TO* [<sub>DP</sub> *there and the place next door*]]  
 b. \*[[<sub>PP</sub> *there* [<sub>P'</sub> *TO* [<sub>DP</sub> ~~*there*~~ and the place next door]]]]  
 c. [<sub>PP</sub> [<sub>DP</sub> *there and the place next door*] [<sub>P'</sub> *TO* ~~*DP*~~]]

Having given some evidence in support of displacement of *there* to [Spec,PP], I will now turn to the syntax of bare (i.e., preposition-less) manner-adverbial expressions. As shown in (29)-(31), manner adverbials can also have a “bare” (i.e. preposition-less) surface form.

- (29) a. The staff gave all their love, care and support, *thus* enabling me to overcome my fears.  
 b. The most beautiful village in England. *Thus* did the artist William Morris describe the village of Bibury.
- (30) a. Don't worry! I'll get there *someway*.  
 b. Since childhood Susan behaved *someway different* and alienated with her schoolmates.
- (31) a. He was dressed *cowboy style*, like many of the men in the tavern.  
 b. The house was decorated *Victorian style*, complete with red rugs laid out on the wood floors and antique pictures on the wall

We have the pro-form *thus* in (29), a manner expression featuring the light noun *way* in (30), and a manner expression featuring the nominal element *style*, which I also take to be a light noun, in (31).<sup>21</sup>

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<sup>21</sup> The special status of the bare (i.e. prepositionless) light noun *way* is also clear from the fact that it can't be pluralized, as shown in (i):

- (i) a. I did it *my way*(\*s).  
 b. The houses in this neighborhood are decorated *Victorian style*(\*s).

Note that *way* and *style* can have a plural form when they are part of a noun phrase that combines with an overt preposition:

Building on Katz and Postal (1964) and Collins (2007), I propose that the manner-adverbial expressions in (29)-(31), which all lack an overt adposition, are hidden adpositional structures in which the pro-form (*thus*) or the light nominal expression (e.g. *someway (different)*) has undergone displacement to [Spec,PP]. Schematically:<sup>22</sup>

- (32) a. [PP [NP *thus*<sub>DET</sub> + *WAY*] [P' IN [~~NP-*thus* + *WAY*~~]]]  
 b. [PP [NP *someway (different)*] [P' IN [~~NP-*someway (different)*~~]]]  
 c. [PP [NP *cowboy style*] [P' IN [~~NP-*cowboy style*~~]]]

Notice that, just as bare locative expressions (cf. (27c)), bare manner expressions can have a coordinate structure.<sup>23</sup>

- (33) He vowed that he would succeed [PP (in) one way or another].

In line with Collins (2007), I assume that *in one way or another* has the structure in (34a), while *one way or another* has the structure in (34b):

- (34) a. [PP in [ConjP [DP one way] or [DP another]]]  
 b. [PP [[DP one way] or [DP another]] [P' IN ~~DP~~]]

Having argued that so-called manner-adverbs such as *thus*, *someway*, and *cowboy style* are actually hidden PPs, it does not seem implausible to assume that the interrogative manner “adverb” *how* (i.e. *how*<sub>Q</sub>) also constitutes a hidden PP containing an unpronounced P, with *how* in [Spec,PP]. Schematically:

- (35) [PP [*how*] [P' IN [~~how~~]]]

Furthermore, if Postal (1966) is right in claiming that “adverbs” such as *then*, *there* and *thus* are nominal expressions with an inner structure, it seems like a natural step to say that the same holds for wh-counterparts such as *when*, *where*, and *how*: [*when*<sub>DET</sub> [*TIME*<sub>Noun</sub>]],

- 
- (ii) a. I struggled *in my own ways*.  
 b. Just over a mile away sits Nitre Hall, a 19th-century historic building decorated *in the Empire and Victorian styles* with colonial exhibits on display.

A similar contrast is found in Dutch. The bare manner noun phrase *mijn manier* ‘my way’ can’t be pluralized. When *mijn manier* is preceded by an overt P, the plural form is possible:

- (iii) a. Ik doe het *mijn manier*(\**en*).  
 I do it my way(s)  
 ‘I do it my way.’  
 b. Ik leef om te genieten en dat doe ik *op mijn eigen manier*(*en*).  
 I live for to enjoy and that do I in my own way(s)  
 ‘I live to enjoy life and I have my own way(s) of doing that.’

<sup>22</sup> If we follow this line of reasoning, manner adverbs such as *carefully* possibly also occupy [Spec,PP], as in (i):

- (i) [PP [NP [*AP careful*] -*ly*] [P' IN [~~NP-*AP careful* [-*ly*]]]]].~~

In Déchaine and Tremblay (1996), Baker (2003), and Corver (2020), it is proposed that *-ly* is a nominal element that is modified by an attributive adjective.

<sup>23</sup> Presumably, the conjunct *another* is a noun phrase in which NP-ellipsis has taken place: *one way or another way*.

[*where*<sub>DET</sub> [*PLACE*<sub>Noun</sub>]], and [*how*<sub>DET</sub> [*WAY*]].<sup>24</sup> This line of analysis leads to the following more articulate structure of the “adverb” *how*:

(36) [<sub>PP</sub> [*how*<sub>DET</sub> [*WAY*]]] [<sub>P'</sub> IN [~~how~~<sub>DET</sub> [~~WAY~~]]]]

In the spirit of Chomsky’s (1999) Uniformity Principle, and in view of their family-relatedness (both being Germanic languages), I assume that Dutch *hoe*<sub>Q</sub> has the same inner organization as English *how*.<sup>25</sup> This leads us to the following structure for Dutch *hoe*<sub>Q</sub>:

(37) [<sub>PP</sub> [<sub>NP</sub> *hoe* + *WAY*] [<sub>P'</sub> IN [~~NP~~-~~hoe~~ + ~~WAY~~]]]

As indicated by this representation, Dutch *hoe*<sub>Q</sub> ‘how’ is part of an adpositional structure containing a silent adposition (say, *IN*) and a silent (light) noun, just like English *how*<sub>Q</sub> in (36). In line with Collins (2007), I assume that the nominal pattern [*hoe*+*WAY*], which features the silent light noun *WAY*, raises to the specifier position of the silent P.<sup>26</sup>

Having argued that Dutch *hoe*<sub>Q</sub> is a nominal expression with the inner structure [<sub>NP</sub> *hoe* + *WAY*], I will now try to give some further substance to this claim. As a preliminary remark, I note that the evidence for *hoe*<sub>Q</sub>’s nominal status will come not only from the manner-adverbial use of *hoe*<sub>Q</sub> but also from other uses of *hoe*<sub>Q</sub>, specifically its use as an interrogative kind-expression and its use as an interrogative degree-expression. Importantly, I take the inner organization of the nominal expression *hoe*<sub>Q</sub> to be the same for these different uses.

My first piece of evidence for the presence of nominal structure comes from the examples in (38):<sup>27</sup>

- (38) a. *Hoe* gaat het?                      (Standard Dutch)  
       how goes it  
       'How are you?'  
       b. *Oes* gaat het?                      (Aarschot Dutch; Pauwels 1958:392)  
       how(-s) goes it  
       'How are you?'

<sup>24</sup> The existence of composite indefinite forms such as *somehow* (‘in some way not specified’) and *anyhow* (‘in any way whatever’), and also the existence of related forms such as *someway* (‘in some way or other’) and *anyway* (see (30)), obviously hints at a composite structure of adverbial forms featuring *how*. I leave the analysis of such forms for future research.

<sup>25</sup> Chomsky’s (1990) Uniformity Principle states the following: “In the absence of compelling evidence to the contrary, assume languages to be uniform, with variety restricted to easily detectable properties of utterances.”

<sup>26</sup> Dutch has a number of manner-adverbial expressions of the type ‘A+P’, such as *hardop* (loud+on, ‘aloud’), *rechtop* (right+up, ‘rightup’), *languit* (long+out, ‘stretched out’), and *voluit* (full+out, ‘fully’). Example (ia) gives an illustration of the use of such expressions. In Corver (to appear), it is proposed that these patterns involve displacement of a nominal expression [<sub>NP</sub> Adjective + *WAY*] from the complement position of P to [<sub>Spec,PP</sub>], as in (ib)

- (i) a. ..dat Jan de zin            *hardop* voorlas.  
       ..that Jan the sentence loud-up read  
       ‘..that Jan read the sentence aloud.’  
       b. [<sub>PP</sub> [<sub>NP</sub> [<sub>AP</sub> *hard*] [<sub>NP</sub> *WAY*]]] [<sub>P'</sub> op [~~NP~~-[~~AP~~-~~hard~~] [~~NP~~-~~WAY~~]]]]

<sup>27</sup> Also in other languages, there are signs of inner structure for the equivalents of the English wh-word *how*. In French *comment*, for example, the components *comme* ‘like’ and *-ent* can be identified. In Kayne (2005), it is proposed that *comment* has the inner structure *comme* + *HOW* + *-ent*. Also in Scandinavian languages, manner ‘how’ has a composite form, as in Danish *hvordan* (*hvor*+*dan*; litt.: *hvor*+done). Interestingly, the bare wh-form *hvor* means ‘where’. *Hvor* is also found in other composite “adverbs”, such as *hvorfor* (‘why’) and *hvornår* (‘when’), which have the inner structure *hvor*+Preposition.

- c. *Oes* doe-re-ge da? (Balens Dutch; <https://www.mijnwoordenboek.nl/dialect/Balens>)  
 how do-2PSg-you that  
 'How do you do that?'

As shown in (38a), the manner adverb *hoe<sub>Q</sub>* is superficially “bare” in Standard Dutch (and also in certain dialectal varieties). Thus, there is no morphological material attached to the “adverb” that signals the presence of composite structure. As shown by (38b,c), however, there are Dutch varieties, in which *hoe<sub>Q</sub>* can be augmented with what is traditionally called ‘adverbial -s’.<sup>28</sup> These varieties are Southern Dutch varieties spoken in Flanders, such as Aarschot Dutch, Balens Dutch and Kortenaeken Dutch.<sup>29</sup>

The question obviously arises as to what kind of grammatical formative this so-called adverbial -s is. Before answering this question, let me give some further illustrations of the appearance of this -s in Dutch adverbial patterns (see Corver 2020).<sup>30</sup>

- (39) a. Jan liep *zacht-je-s*. (Manner)  
 Jan walked slow-DIM-s  
 ‘Jan walked slowly.’  
 b. Jan huilde *op-een-s*. (Time)  
 Jan cried at-one-s  
 ‘Jan cried at once.’  
 c. Dit is *veels* te duur. (Measure)  
 this is much-s too expensive  
 ‘This is much too expensive.’

In line with Corver (2019, 2020), I assume that adverbial -s, historically a genitive case, instantiates the categorial node *n*, which combines with a silent root that represents a particular “adverbial meaning” such as manner (WAY), time (TIME), or measure (MEASURE).<sup>31</sup> This analysis yields the representations in (40a,b,c) for (39a,b,c), respectively:

- (40) a. [Noun Phrase [AP *zacht*] [ClasP -je [nP WAY+n<sup>o</sup> (= -s) [WAY]]]]<sup>32</sup>  
 b. [PP *op* [QP *een* [nP TIME+n<sup>o</sup> (= -s) [TIME]]]]

<sup>28</sup> Adverbial -s is absent when *oe* ‘how’ is used as a degree word modifying a gradable adjective:

- (i) [*Oe*(\*-s) *groot*] is uw *zoontje* al? (Aarschot Dutch, Pauwels 1958)  
 how tall is your son-DIM already  
 ‘How tall is your son now?’

This contrast between “independent” *oes* in (38b,c), on the one hand, and “dependent” *oe* in (i), on the other, is somehow reminiscent of the contrast between English “independent” *yours*, where -s obligatorily occurs, versus “dependent” *your* in *your car*, where -s must be absent after the possessive pronoun.

- (ii) a. This is your(\*-s) car.  
 b. This is your\*(-s).

I will leave the investigation of this formal contrast between the manner expression *oes* and the degree expression *oe* for future research.

<sup>29</sup> The Aarschot Dutch example is taken from Pauwels (1985: 392), the Balens Dutch example from the website address: <https://www.mijnwoordenboek.nl/dialect/Balens>. For Kortenaeken Dutch, see: <https://www.mijnwoordenboek.nl/dialect/Kotnakes>.

<sup>30</sup> (39a,b) represent Standard Dutch, (39c) is attested in colloquial Dutch and dialectal varieties of Dutch.

<sup>31</sup> See Marantz (1997, 2000) for arguments in support of the existence of categorial nodes like *n*.

<sup>32</sup> As indicated, I take the diminutive morpheme *-je* to be a classifier; see Wiltschko (2005), Ott (2011), Corver (2020). See also De Belder (2011) for the functional status of *-je*.

c. [DegP [QP veel [nP MEASURE+n° (= -s) [MEASURE]]] te duur]

As indicated by these representations, I take *zachtjes*, *eens* and *veels* to be hidden noun phrases, whose silent root raises to the categorial node *n*. Under the assumption that minimally one component of a complex head must externalize, I take adverbial *-s* to be a last resort manifestation of the categorial node *n*. Since the root adjoined to *n* does not externalize, *n* must be spelled out phonologically, as in (41):<sup>33</sup>

(41) [Noun Phrase oe [nP [WAY+n (= -s)] [WAY]]] (Aarschot Dutch)

This, of course, raises the question as to why Standard Dutch *hoe* does not feature so-called adverbial *-s*. I tentatively propose that the linguistic expression *hoe* does not involve head-raising of the root to *n*. In other words, the root stays *in situ* and no complex head is formed, as in (42). Since no complex head of the type [WAY+n] is formed, *n* does not have to surface as a last resort.<sup>34</sup>

(42) [Noun Phrase hoe [nP n [WAY]]] (Standard Dutch)

I will now turn to a second argument in support of the hypothesis that *hoe*<sub>Q</sub> is part of a larger nominal expression. The starting point of my argument is the well-known interrogative *wat voor (een) +N*-construction in Dutch (Den Besten 1985, Corver 1990, Bennis 1995, Bennis *et al* 1998), which carries the meaning ‘what kind of N’. An example of this nominal construction is given in (43a). What is interesting is that, in certain varieties of Dutch, including Groningen Dutch (Ter Laan 1953:54), the interrogative pattern *hoe zo'n +N* (how so a, what kind of) is used instead of the standard Dutch *wat voor een* ‘what kind of’; see (43b).<sup>35</sup>

- (43) a. [Wat voor een potlood] heb je gekregen?  
 what for a pencil did you get  
 ‘What kind of pencil did you get?’  
 b. [Hou+*wh* zoo'n-*wh* grivvel] hest kregen? (Groningen Dutch; Ter Laan 1953)  
 how so-a pencil have-2P.Sg got  
 ‘What kind of pencil did you get?’

From a surface perspective, the *hoe zo'n* pattern in (43b) is quite similar to the possessive doubling pattern *wie + z'n* (who + his; ‘whose’) in (44). In both patterns, a [+wh]-element is doubled by a related [-wh]-element. In (44), for example, we have the interrogative possessor

<sup>33</sup> I take the nominal expression *oes* to occupy Spec,PP, just like Standard Dutch *hoe*. Interestingly, certain R-pronouns featuring so-called adverbial *-s* also occupy Spec,PP. This is exemplified in (i):

- (i) Jan heeft toen [PP *ergens/nergens* op] gerekend.  
 Jan has then somewhere/nowhere on  
 ‘Jan counted on something/nothing.’

<sup>34</sup> This cross-dialectal variation as regards the appearance of adverbial *-s*, which I take to be a realization of the categorial head *n* is more widespread. For example, certain Dutch dialects have the form *toen+s* (then+s, ‘then’) instead of the (Standard Dutch) form *toen*. See e.g. *tons* in Deinze Dutch (East-Flanders), *tongs* in Brugge Dutch (West-Flanders). See: <https://www.mijnwoordenboek.nl/dialect-vertaler.php?woord=toen>.

<sup>35</sup> See Corver and Van Koppen (2011a) for discussion of the various manifestations of the *wat voor*-construction across Dutch dialects.

wèl and the doubling possessive pronoun *z'n*, and, in (43b), we have the interrogative wh-word *hou* and the doubling demonstrative pro-form *zo*.<sup>36</sup>

- (44) [*Wèl*<sub>+wh</sub> *zien*<sub>-wh</sub> *bouk*] is dat? (Groningen Dutch; Ter Laan 1953:54)  
 who his book is that  
 'Whose book is that?'

In the generative-linguistic literature, doubling patterns involving personal pronouns have been analyzed as composite pronominal forms in which the (strong-pronominal) doubler occupies the Spec-position of the (weak-pronominal) doublee.<sup>37</sup> Building on these proposals, I propose that the sequence *wèl zie'n* has the phrasal structure in (45a), while the sequence *hou zoo'n* has the phrasal structure in (45b):

- (45) a. [<sub>DP</sub> wèl [<sub>PosP</sub> zie [<sub>nP</sub> n<sup>o</sup> ['n]]]] + bouk  
 b. [<sub>DP</sub> hou [<sub>DemP</sub> zoo [<sub>nP</sub> n<sup>o</sup> ['n]]]] + grivvel

I take *'n* (pronounced: schwa + n) to be a pro-form similar to English *one* (see Corver and Van Koppen 2011b; Corver 2017). In (45a), it designates 'person', while in (45b) it designates 'type/kind'.<sup>38</sup>

I will now turn to a third argument in support of the hypothesis that the wh-element *hoe<sub>Q</sub>* is part of a larger nominal expression. The pertinent pattern comes from Katwijk Dutch, as discussed in Overdiep (1936:600). Overdiep points out that Katwijk Dutch permits nominal expressions such as *hoe'n zuinige kok* in (46), in which the degree word *hoe<sub>Q</sub>* is separated from the gradable adjective *zuinige* by an interspersed element *'n*.

- (46) Dat kwam er an [<sub>NP</sub> [*hoe'n* *zuinige*] *kok*] of je 'n haai.  
 that depended there upon how-a/one frugal cook if you NEG had  
 'It depended on the how efficient a cook you had.'

Of course, it is tempting to analyze the component *'n* of *hoe'n* as an indefinite article belonging to (i.e., combining with) the modified noun phrase *zuinige kok* 'frugal cook', and not to the wh-word *hoe*. Such an analysis, however, raises the question as to how the article *'n*

<sup>36</sup> The doubling possessive construction is also possible in Standard Dutch: *wie z'n boek* 'whose book'.

<sup>37</sup> See Uriagereka (1995) for clitic-doubling (ia) and Van Craenenbroeck and Van Koppen (2008) for subject-doubling (ib) in West-Flemish. Give the structures.

- (i) a. *Lo* *empujaron a Juan* (Spanish)  
 him pushed to Juan  
 'They pushed Juan.'  
 b. *He-de* *gij da gezien?* (Brabantish Dutch)  
 have-you<sub>weak</sub> you<sub>strong</sub> that seen  
 'Have you seen that?'

As proposed by these authors, the clitic/weak pronominal element (*lo*, *de*) and the strong (pro)nominal element (*a Juan*, *gij*) form a syntactic unit underlyingly. Somewhat simplified, these can be represented as follows: (i) [<sub>DP</sub> *a Juan* [<sub>D'</sub> *lo*]]; (ii) [<sub>DP</sub> *gij* [<sub>D'</sub> *de*]]. As the authors point out, the derived structure results from movement of the clitic/weak pronoun out of the complex pronoun.

<sup>38</sup> For reasons of space, I restrict myself here to giving some additional examples of the occurrence of the nominal pro-form *-en*. It should be noted that *-en* can represent different kinds of units or entities, such as 'space/location' — *naar achteren*, litt.: to behind-*en*, 'backwards'— and 'time' — *na en-en*, litt.: after one-*en*, 'after one o'clock'. Interestingly, many words for geographical locations end with *-en*: *Leid-en*, *Groning-en*, *Zwed-en* (Sweden). Note that the 'person' reading of *-en* can still be recognized in the noun *jongen* 'boy', which, historically, presumably relates to *jong-en* (young+one).

gets interspersed in between the degree element *hoe*<sub>Q</sub> and the attributive adjective *zuinige*. One approach would be the following: *hoe*<sub>Q</sub> starts out as a component of the attributive adjective phrase, as in [*'n* [*hoe* *zuinige*] *kok*], and ends up in a position preceding the indefinite article as a result of movement to, say, [Spec,DP], as in: [<sub>DP</sub> *hoe* [<sub>D</sub> *'n* [~~*hoe*~~ *zuinige*] *kok*]]. Such an analysis, however, raises the question as to why subextraction of *hoe* does not trigger a Left Branch Condition effect (Ross 1967, Corver 1990). Normally, the degree word *hoe* cannot be removed from within an adjective phrase, as exemplified in (47a); pied piping is required, as in (47b):

- (47) a. \*Ik vraag me af *hoe* deze kok [~~*hoe*~~ *zuinig*] is. (Standard Dutch)  
 I wonder REFL PRT how this cook frugal is  
 'I wonder how frugal this cook is.'  
 b. Ik vraag me af [*hoe* *zuinig*] deze kok ~~*hoe*~~ ~~*zuinig*~~ is.

Another piece of evidence against interpreting *'n* in (46) as an indefinite article comes from the following example, drawn from Overdiep (1936:600).

- (48) Dat kwam er an [<sub>AP</sub> *hoe'n* lang] je zaewerd en was. (predicative AP)  
 that came there on how-a/one long your journey NEG was  
 'It depended on how long your journey lasted.'

In this example, there is no noun present to which *'n*, if it were an article, could belong. Importantly, *hoe'n lang* is a predicative adjective phrase in (48). Since it is unlikely that *'n* combines with the adjective *lang*, one comes to the conclusion that *'n* forms a unit with *hoe*. Taking the position that Dutch varieties—in *casu*, Katwijk Dutch and Groningen Dutch—have the same underlying structure, I propose that Groningen Dutch *hoe'n* has the structure in (49), where *ZO* is a silent grammatical formative.<sup>39</sup>

- (49) [<sub>DP</sub> *hoe* [<sub>DemP</sub> *ZO* [<sub>nP</sub> *n*<sup>o</sup> [*'n*]]]] + *lang*

As shown in (47b), the Standard Dutch degree expression *hoe*<sub>Q</sub> does not permit the presence of *'n* in combination with *hoe*. Under the assumption that the internal structure of adverbial pronouns is the same across dialectal varieties of Dutch, I take the inner organization of Standard Dutch *hoe* to be just like (49), the only difference being that the root does not externalize but remains silent (here represented as *MATE* 'extent/measure', a silent measure noun):

- (50) [<sub>DP</sub> *hoe* [<sub>DemP</sub> *ZO* [<sub>nP</sub> *n*<sup>o</sup> [*MATE*]]]]

Let me finish my discussion of the inner organization of *hoe*<sub>Q</sub> with another pattern featuring *hoe*, namely causal *hoezo* 'why', which is exemplified in the discourse fragment in (51):

- (51) A: Je mag niet fietsen in dit park.  
 you may not cycle in this park  
 'You are not allowed to cycle in this park.'

<sup>39</sup> Overdiep (1936:600) notes that Groningen Dutch has the patterns *hou'n dat* (how-*n* that) and *hou'n of* (how-*n* whether), where *dat* is a declarative subordinating conjunction and *of* an interrogative subordinate conjunction.

B: *Hoezo* mag je niet fietsen in dit park?  
 how-so may you not cycle in this park  
 ‘How come you are not allowed to park in this park?’

The linguistic expression *hoezo* has a causal meaning (‘how come?/why?’) and typically occurs in root (i.e. non-embedded) clauses. Although the grammatical nature of this causal element has remained quite mysterious so far, it seems to fall (more) into place if one assumes that this interrogative *hoe*-pattern has the same inner organization as the interrogative *hoe*-patterns discussed earlier, namely the one in (52):

(52) [DP *hoe* [DemP ZO [nP n° [REASON]]]]

Note that the inner organization of *hoezo* in (52) is similar to that of Groningen Dutch *hou zo ’n* in (43b). They only differ as regards the choice of the silent root.

Summarizing, I have tried to show that the linguistic expression *hoe*<sub>Q</sub>, traditionally analyzed as an interrogative adverb, is actually a nominal expression with a composite structure, as in (53). Evidence for this structure came from different types of interrogative *hoe*-patterns in dialectal/colloquial varieties of Dutch. In those varieties, components of the nominal expression (e.g. *-s*, *’n*, *zo*) externalize, this way providing evidence for the existence of a nominal structure. Taking structural symmetry seriously, both at the cross-constructural level (i.e., *hoe*<sub>manner</sub>, *hoe*<sub>degree</sub>, *hoe*<sub>kind</sub>, *et cetera*) and at the cross-dialectal level, I assume that the inner structure of these *hoe*-expressions is the same. Differences relate to the selection of the “nominal” root (*hoe*+WAY; *hoe*+EXTENT; *hoe*+KIND; *hoe*+REASON) and the externalization of the nominal components, more specifically, the root (silent or pro-*nominal* *’n*) and functional material (*-s*, *zo*, or silent).

(53) [DP *hoe* [DemP (ZO) [nP n° [Root WAY/EXTENT/TIME/REASON]]]]

I propose that this approach, according to which the various manifestations of *hoe*<sub>Q</sub> have the same underlying base structure, should be extended to eventive *hoe* (i.e. *hoe*<sub>E</sub>). Specifically, *hoe*<sub>E</sub> has the phrasal structure in (53), with *WAY* being the silent root. Being a phrase, *hoe*<sub>E</sub> cannot occupy a functional head position in the left peripheral complementizer system. It rather occupies a specifier position. In what follows, I will try to give evidence for this syntactic placement of *hoe*<sub>E</sub>. Furthermore, I aim to say a bit more about the grammatical role *hoe*<sub>E</sub> fulfills within the embedded clause. For answering this last question, I will first consider the left periphery of adjunct clauses in section 5, focusing on nominal material as part of what are traditionally called ‘conjunctions’. In section 6, I will return to complement clauses introduced by *hoe*<sub>E</sub>, and discuss its syntactic position and grammatical role within the complement clause.

## 5. Light nominal expressions in adjunct clauses

In section 4, it was argued that superficially “bare” adverbs such as English *where*, *there*, *when* and *then* are nominal expressions (‘adverbial pronouns’) with a composite structure, which occupy the specifier position of PP as a result of a PP-internal movement operation (see (23)). In line with Chomsky’s (2001) Uniformity principle, I propose that this analysis can be extended to Dutch ‘adverbial pronouns’, such as the non-wh-forms *toen* ‘then’, *daar*

‘there’, and *zo* ‘this way/soon’, and the wh-forms *wanneer* ‘when’ and *waar* ‘where’.<sup>40</sup> This means, for example, that *toen* ‘then’ undergoes PP-internal displacement to [Spec,PP], as in (54):

(54) [<sub>PP</sub> [<sub>toen</sub><sub>DET</sub> [<sub>TIME</sub><sub>Noun</sub>]]] [<sub>P</sub> P [<sub>toen</sub><sub>DET</sub> [<sub>TIME</sub><sub>Noun</sub>]]]]

Empirical support for the PP-internal displacement of these adverbial pronouns comes from the distribution of certain modifying adverbs. Consider, for example, the following minimal pair:

- (55) a. [<sub><net></sub> na de explosie <\*⊂>net>] klonk er gegil.  
 just after the explosion sounded there screaming  
 ‘There was a lot of screaming just after the explosion.’
- b. [<sub><\*⊂>net></sub> toen <\*⊂>net>] klonk er gegil.  
 just then sounded there screaming  
 ‘I just heard a lot of screaming.’

When we compare (55a) and (55b), we observe a striking word order difference: in the adpositional pattern in (55a), the modifier *net* ‘just’ must precede the rest of the temporal PP (*na de explosie*), while, in the "adverbial" pattern in (55b), it must follow *toen*. Rather than stipulating that *net* is base-generated as a left branch modifier in (55a) and as a right branch modifier in (55b), I propose that *net* is base-generated in one and the same structural position in both temporal constructions. Specifically, I propose that *net* is a left branch modifier within the adpositional structure, and that the word order *toen net* results from (obligatory) displacement of the adverbial pronoun *toen* from the complement position of P to [Spec,PP].<sup>41</sup> Schematically:

- (56) a. [<sub>PP</sub> Spec [<sub>P</sub> net [<sub>P</sub> na [de explosie]]]]  
 b. [<sub>PP</sub> [<sub>toen</sub><sub>DET</sub> [<sub>TIME</sub><sub>Noun</sub>]]] [<sub>P</sub> net [<sub>P</sub> P<sub>temporal</sub> [<sub>toen</sub><sub>DET</sub> [<sub>TIME</sub><sub>Noun</sub>]]]]]

Turning next to Dutch adverbial clauses, we notice the non-wh-elements *daar*, *toen*, and *zo* can also introduce an adverbial clause. Some illustrations are given in (57):<sup>42</sup>

- (57) a. [*Toen* het *die dag* regende] werd het feest afgelast.  
 then it that day rained was the part canceled  
 ‘The party was canceled when it rained that day.’
- b. [*Daar* het *om die reden* glad was] werd de wedstrijd afgelast.  
 there it for that reason slippery was was the race canceled  
 ‘Since it was slippery for that reason (e.g. snow), the race was canceled.’

<sup>40</sup> Besides temporal *toen net* in (55b), Dutch also permits the patterns *daar net* (there just) and *zo net* (so just), which, just like *toen net*, have the temporal reading ‘just’.

<sup>41</sup> For the sake of discussion, I use a simplified adpositional structure here. The spirit of the analysis can also be captured with a more articulated adpositional structure, as, for example, in Koopman (2000b).

<sup>42</sup> Notice that conjunctive *toen* can cooccur with adverbial *toen*, as in (i). Such examples strongly suggest that conjunctive *toen* is base-generated in the left periphery of the clause, and does not originate in a clause-internal position.

- (i) [<sub>Toen</sub><sub>conjunctive</sub> het <sub>toen</sub><sub>adverbial</sub> begon te regenen] kocht hij gauw een paraplu.  
 when it then started to rain bought he quickly an umbrella  
 ‘When it started to rain at that moment, he quickly bought an umbrella.’

- c. [Zo zij het al wist] zou ze het wel gezegd hebben.  
 so she it already knew would she it for.sure said have  
 'If she had possibly already heard about this, she would for sure have told me.'

As shown by (57a,b), the temporal element *toen* can co-occur with the temporal expression *die dag*, and the causal element *daar* can co-occur with the reason adverbial *om die reden*. This co-occurrence phenomenon is reminiscent of the cooccurrence phenomenon in eventive *hoe*-complements, where clause-initial *hoe<sub>E</sub>* co-occurs with a clause-internal manner adverbial expression, as in (9), repeated here as (58):

- (58) Ik vertelde aan Jan [*hoe* de studenten het probleem *snel en adequaat* oplosten].  
 I told to Jan how the students the problem fast and adequately solved  
 'Jan told about the students' quickly and adequately solving the problem.'

Recall from section 3 that the co-occurrence phenomenon in (58) was interpreted as evidence in support of an analysis in which *hoe<sub>E</sub>* is base-generated in the left periphery of the embedded clause; that is, *hoe<sub>E</sub>* does not originate in the clause-internal position in which manner adverbials typically occur. In view of this parallelism with the co-occurrence phenomena in (57a,b), it does not seem implausible to also analyze *toen*, *daar*, and *zo* in (57) as elements that are base-generated in the left periphery of the clause.

This base-generation analysis can be extended to the non-interrogative wh-elements *wanneer* (59a) and *waar* (59b).<sup>43</sup>

- (59) a. [*Wanneer* het *vanavond* gaat regenen] hoor je de vogels fluiten.  
 when it tonight goes rain hear you the birds whistle  
 'When its starts raining this evening, you'll hear the birds sing.'
- b. [*Waar* ik *om die reden* altijd mijn best heb gedaan] is zo'n verwijt zeer hard.<sup>44</sup>  
 where I for that reason always my best have done is such.a reproach very cruel  
 'Since I have always done my best for that reason, such a reproach is very cruel.'

The wh-element *wanneer* introduces a temporal-adverbial clause, while *waar* introduces a causal-adverbial clause. Observe that the temporal element *wanneer* can co-occur with the clause-internal temporal expression *vanavond*, and that the causal element *waar* can co-occur with the reason-adverbial *om die reden*. This cooccurrence pattern seems to hint again at an analysis in which the clause-introducing wh-element is base-generated in the left periphery of the clause; that is, it does not originate in a clause-internal position.

The question obviously arises as to how to analyze the clause-initial elements in (57) and (59). In traditional grammar, these elements have been characterized as subordinating conjunctions. Specifically, *toen* (57a) and *wanneer* (59a) are temporal conjunctions, *waar* (59b) and *daar* (57b) causal conjunctions, and *zo* (57c) a concessive conjunction. According to this analysis, the temporal conjunction *toen* in (57a) and the temporal "adverb" *toen* in (60a) are lexically different words having the same pronunciation (i.e. homonymy). The same holds for the conjunction *wanneer* in (59a) and the interrogative adverb *wanneer* in (60b):

<sup>43</sup> The conjunctive element *waar* in (59b) is only used in formal Dutch.

<sup>44</sup> See also Overdiep (1936:597) for this causal *waar*.

- (60) a. Het heeft [<sub>PP</sub> *toen*] geregend.  
 it has then rained  
 ‘It was raining then.’
- b. [<sub>PP</sub> *Wanneer*] heeft het ~~*wanneer*~~ geregend?  
 when has it rained  
 ‘When did it rain?’

Rather than treating conjunctive *toen/wanneer* and adverbial *toen/wanneer* as distinct (homonymous) items, I adopt a reductionist approach by proposing that there is only a single element *toen/wanneer* in the lexicon. Its “conjunctive” or “adverbial” function is determined configurationally by the position *toen/wanneer* occupies in the larger syntactic structure. When it has its origin in a clause-internal base position, *toen/wanneer* functions as a clause-internal temporal modifier, when it has its origin in the left periphery of the adjunct clause, it has a conjunctive role. Importantly, I assume that the structural configuration in which *toen/wanneer* appears, is the same for the conjunctive use and the adverbial use. Specifically, I propose that the nominal expression *toen/wanneer* typically occurs in the specifier position of PP. For the adverbial use of *toen/wanneer*, this has already been argued for in section 4 (on the basis of Postal (1966) and Collins (2007)). If this [Spec,PP]-analysis is extended to the clausal constructions in (57a) and (59a), we end up with the representations in (61a) and (61b), respectively:

- (61) a. [<sub>PP</sub> *toen* [<sub>P'</sub> P [<sub>het die dag regende</sub>]]]  
 b. [<sub>PP</sub> *wanneer* [<sub>P'</sub> P [<sub>het vanavond gaat regenen</sub>]]]

The idea that adverbial clauses are adpositional constructions, just like ‘adverbial pronouns’, is not implausible. As a matter of fact, certain adverbial clauses provide direct support for such an adpositional analysis, namely by the presence of an overt adposition, as exemplified in (62); see Van Riemsdijk (1978), Bennis and Hoekstra (1984):

- (62) a. ..[<sub>PP</sub> *voor* [<sub>CP</sub> *dat* Jan vertrok]].  
 before that Jan leaves  
 ‘...before John leaves.’
- b. ..[<sub>PP</sub> *tot* [<sub>CP</sub> *dat* Jan vertrekt]].  
 till that Jan leaves  
 ‘..till Jan will leave.’
- c. ..[<sub>PP</sub> *na* [<sub>CP</sub> *dat* Jan vertrok]].  
 after that Jan left  
 ‘...after Jan left.’

According to the analysis in (62), the adposition (*voor, tot, na*) takes a clausal complement that is introduced by the subordinating conjunction *dat*. If we have the same situation in (61), this would lead us to the following slightly more specified representations:<sup>45</sup>

<sup>45</sup> Note that the subordinator *dat* ‘that’ is absent in the adjunct clauses in (63). In this respect they differ from the adjunct clauses in (62). A full discussion of the presence *versus* absence of the subordinator *dat* falls beyond the scope of this chapter. I restrict myself here to pointing out that *dat* can (optionally) be absent in (62a,b), as in *voor Jan vertrok*, but not in (62c): *na \*(dat) Jan vertrok*. Furthermore, in certain dialectal varieties of Dutch, conjunctions such as *toen* can cooccur with the subordinator *dat*; example (i) is drawn from the SAND-database (<https://www.meertens.knaw.nl/sand/zoeken/>); see Barbiers *et al* (2006).

- (i) Et gebeurde [*toen da* gaai wegging] (Borghout Dutch)

- (63) a. [PP toen [P' P [CP het die dag regende]]]  
 b. [PP wanneer [P' P [CP het vanavond gaat regenen]]]

If we adopt the structures in (63), however, conjunctive *toen/wanneer* in (63) differs from adverbial *toen/wanneer* in (60) in terms of the type of Merge-operation that applies within PP. The latter ends up in Spec,PP as a result of displacement (i.e. I-Merge, as in (54)), the former does not; it is simply base-generated (E-merged) in Spec,PP. The derivational process becomes symmetric, however, if *toen* and *wanneer* in (63) originate in a position in between the adposition and the clause. In other words, [*P* + *toen/wanneer* + *clause*]. Starting from such a base structure, the patterns in (63) would actually be movement-derived structures, as in (64):

- (64) a. [PP *toen* [P' P ~~*toen*~~ [CP het die dag regende]]]  
 b. [PP *wanneer* [P' P ~~*wanneer*~~ [CP het vanavond gaat regenen]]]

Although the idea that ‘adverbial pronouns’ such as *toen*, *wanneer*, *et cetera* originate in a position in between the adposition and the rest of the clause may seem implausible at first sight, the existence of the following “complex conjunctions” possibly sheds a different light on this.<sup>46</sup>

- (65) a. [PP naar [**mate** [hij ouder werd]]]  
 to measure/extent he older grew  
 ‘as he got older’  
 b. [PP in [**geval** [dat hij slaapt]]]  
 in case that he sleeps  
 ‘in case he sleeps’  
 c. [PP in [**dien** [dat hij slaapt]]]<sup>47</sup>  
 in that that he sleeps  
 ‘if he sleeps’  
 d. [PP ter [**wijl** [dat hij slaapt]]]  
 by time that he sleeps  
 ‘while he sleeps’  
 e. [PP voor [**aleer** [dat je dat doet]]]  
 before all-earlier that you that do  
 ‘before you do that’  
 f. [PP van [**wege** [dat hij slaapt]]]  
 be cause that he sleeps  
 ‘because he sleeps’  
 g. [PP be [**halve** [dat je zoiets zegt]]]  
 by half that you such-a-thing say  
 ‘apart from your saying such a thing’

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It happened then that you left  
 ‘It happened when you left.’

<sup>46</sup> In Dutch orthography, the P+N sequence is written as a single word, as in *naarmate*, *ingeval*, *terwijl*, *et cetera*.

<sup>47</sup> The form *dien* in *indien* used to be the dative case form of the demonstrative pronoun. One might argue that *dien* is an unanalyzed form in present-day Dutch, which is simply stored in the lexicon. An alternative analysis would be one in which the *-n* following *die* is not a case form but a pro-form of the type *-en* (i.e. ‘one’); see note 38. Under such an analysis, *dien* would have a composite structure: *die* + *-n*.

Each of these complex conjunctions instantiates the following pattern: *P + nominal element + clause*. Importantly, the sequence *P + nominal element* should not be analyzed as a complex word, that is [*Word P+N*]. Evidence against a complex word analysis comes from the stress pattern associated with the sequence *P+N*. We typically do not find compound stress, as in (66a), but rather phrasal stress, as in (66b), where we have an adpositional phrase consisting of a preposition and a bare noun.<sup>48</sup> This phrasal stress pattern of the “complex conjunctions” in (65) is illustrated in (66c):

- (66) a. OPmaat (‘upbeat’), VOORval (before-vall, ‘incident’), INborst (in-bosom, ‘nature/character’), INGewand (in-side, ‘inside/intestine’)  
 b. naar HUIS (to home, ‘home’), ter ZEE (at sea), in NOOD (in need, ‘in dire straits’)  
 c. naar MATE, in geVAL, in DIEN, ter WIJL, van WEGE, be HALVE, voor aLEER

Interestingly, the phrasal stress pattern in (66c) is also found with the italicized linguistic expressions in (67), which have a composite structure and are traditionally considered to be words of the categorial type ‘adverb’. Given their phrasal stress pattern, I take these expressions to be phrasal constituents, more specifically PPs that consist of a preposition (e.g. *buiten*) and a bare noun phrase (*mate*). Thus: [*PP buiten [NP mate]*].

- (67) a. Zijn gedrag stoorde mij *buiten*MATE. (compare (65a))  
 his behavior annoyed me outside-measure  
 ‘His behavior annoyed me enormously.’  
 b. Heb je *bijge*VAL een potlood voor mij te leen. (compare (65b))  
 have you by-case a pencil for me for borrow  
 ‘Do you maybe have a pencil for me that I can borrow?’  
 c. Het bleef *na*DIEN nog lang onrustig.<sup>49</sup> (compare (65c))  
 It remained after-that still long  
 ‘For a long time the situation remained very unsettled afterwards.’  
 d. Het was *onder*WIJL gaan regenen. (compare (65d))  
 It was under-while go rain  
 ‘Meanwhile it had started raining.’

Having shown that the sequence *P + N* in (65) does not form a complex word but rather constitutes a phrasal unit together with the clause —for example, [*PP naar [mate + clause]*]— I will now address the question as to what the structural relationship is between the nominal element (e.g. *mate*) and the clause that follows it (e.g. (*dat*) *hij ouder wordt*). Of course, it is tempting to analyze the clause that follows the bare noun as a complement clause of the noun, or as a relative clause that modifies the noun. It should be noted however that the nouns in (65) and (67) typically do not combine with any satellite constituent, which raises the question as to why they should be able to combine with a clause. This restricted combinatorial behavior of the boldface elements in (65) is exemplified in (68) for *mate*:

- (68) a. \*naar *de* mate dat hij ouder werd, ....  
 to the extent that he older grew  
 b. \*naar *forse* mate dat hij ouder werd, ...  
 to large extent that he older grew

<sup>48</sup> Stress is represented by small capitals.

<sup>49</sup> The pattern featuring *dien* is more common in present-day Dutch: e.g. *bovendien* (above-that, ‘moreover’), *sindsdien* (since-that, ‘ever since’).

- c. \*naar *mindere* mate hij ouder werd, ...  
to lesser extent he older grew

As shown in (68), *mate*, when part of the expression *naar mate* + *clause*, cannot be combined with a determiner (68a), nor with an attributive AP (68b) or a quantifying element (68c).

Importantly, as shown in (69)-(70), *mate* does display the full range of nominal characteristics in certain other adpositional environments:

- (69) Wij steunden hem ..  
we supported him ..
- a. .. [naar *de* mate van onze mogelijkheden].  
to the extent of our possibilities  
'within the limits of our possibilities.'
- b. .. [in *forse* mate].  
in large extent  
'to a large extent.'
- c. .. [in *mindere* mate].  
to lesser degree

- (70) Jan kreeg passend werk [naar de mate *die het bedrijf mogelijk achtte*].  
Jan got suitable work to the extent which the company possible considered  
'Jan got a suitable job within the limits of what was possible for the company.'

In these examples, the nominal expression headed by *mate* behaves like an argument of the preposition heading the adjunct PP; that is, P assigns a thematic role to the nominal expression.

In view of the contrastive behavior of *mate* in (65a), on the one hand, and *mate* in (69)-(70), on the other hand, I propose that we are dealing here with different types of nominal expressions: *mate* in (69)-(70) is the head of a full-fledged nominal expression (say, DP or QP), which functions as an argument of the preposition (*in, naar*). The nominal expression *mate* in (65a), on the contrary, is a minimal nominal expression of the type nP, with n being the categorizing head and *mate* being the root. I assume that within this small nominal expression nP, *mate* raises to n, yielding the amalgam [*mate+n*].

Given its minimal nominal syntax—that is, the presence of nP, but the absence of QP and DP—*mate* in (65a), but also the other nominal elements in (65), has a basic conceptual meaning. The nominals in (65) represent substantive notions such as 'extent/measure' (*mate*), 'thing/fact' (*geval, dien*), 'time' (*wijl, aleer*), and 'side' (*halve*). Importantly, I assume that *mate* in (65a) and *mate* in (69)-(70) involve one and the same lexical item (i.e. root); that is, there is only a single listeme *mate* in the Dutch lexicon. In line with Borer's exo-skeletal approach (2005),<sup>50</sup> I assume that the distinction between the "regular" noun *mate* in (69) and (70), on the one hand, and the "irregular" noun *mate* in (65a), on the other, is simply a consequence of the configurational "richness" of the extended nominal projection (e.g. nP,

<sup>50</sup> The term 'exo-skeletal' stands for "the view that it is the properties of the 'outside', larger structure which ultimately determine the overall 'shape' of what is within, rather than the other way around. More specifically, I (NC: Hagit Borer) will suggest that syntactic properties typically assumed to emerge from properties of listemes, are, by and large, properties of structures and not properties of the listemes themselves." (Borer 2005:15). The opposite is labeled 'endo-skeletal' and takes "the listeme as a skeleton around which the syntax is constructed." (Borer 2005: 5). In other words, the latter approach takes the properties of larger units to be projections of properties of some central lexical entry.

QP, DP) in which the root *mate* is embedded.<sup>51</sup> If we just have a minimal nominal expression of the type nP, as in [<sub>nP</sub> n [*mate*]], we have a substantive syntactic object carrying the basic meaning ‘measure/extent’. In what follows, I will refer to such a minimal nominal expression as a ‘light nP’, where ‘lightness’ refers to both semantic properties (absence of “functional meaning” associated with Q/D) and structural lightness (absence of functional projections such as QP/DP).<sup>52</sup>

If *mate* in (65a) is a light nominal expression, the question obviously arises as to what its relationship is with the clause that follows it.<sup>53</sup> In line with much other work on light nominals, I assume that *mate* occupies the specifier position of a functional head, namely the complementizer-head (i.e. C), and fulfills a more grammatical function within the structural configuration in which it is embedded, that is, CP.

(71) .. [<sub>PP</sub>naar [<sub>CP</sub> [<sub>nP</sub> *mate*] [<sub>C</sub> C [hij ouder werd]]]]  
to measure/extent he older grew  
‘..as he got older’

A nice parallel can be drawn here with bipartite negation (*ne...pas*) in a language like French. The relation between *ne* and *pas*, which historically relates to the noun *pas* carrying the meaning ‘step’, has been interpreted as one between a negative functional head (*ne*) and a negative phrase (*pas*).<sup>54</sup> More specifically, it has been proposed that the negative phrase *pas* occupies the Spec-position of the negative head Neg (*ne*), as in (72):

(72) [<sub>NegP</sub> [<sub>XP</sub>+neg] [<sub>Neg</sub> Neg .....]]

This NegP-configuration is exemplified in (73), where (73a) represents the base structure and (73b) the derived structure. As indicated in (73b), it is assumed that the negative clitic is picked up by the finite verb when it is on its way to Tense/I (Pollock 1989).

(73) a. Je crois que [<sub>IP</sub> elle [<sub>I</sub> a [<sub>NegP</sub> *pas* [<sub>Neg</sub> *ne* [a vu son père]]]]]  
I believe that shehas not not has seen her father  
‘I believe that she didn’t see her father.’  
b. Je crois que [<sub>IP</sub> elle [<sub>I</sub> [*ne*+a] [<sub>NegP</sub> *pas* [<sub>Neg</sub> ~~*ne*~~ [a vu son père]]]]]

In Rizzi (1991), this configurational condition on the relationship between two markers designating the same meaning-related property (*in casu*, negation) is called the Criterion Condition:

(74) Criterion Condition  
a. Each X<sub>[F]</sub> must be in a Spec-Head relation with a [F]-operator.  
b. Each [F]-operator must be in a Spec-Head relation with a X<sub>[F]</sub>.

<sup>51</sup> In this respect, *mate* is not very different from an (English) noun like *cat*, which can have the meaning of a mass noun (*There is a lot of cat on the road*), a common noun (*There is a cat on the roof*), or a proper name (*Cat is on the roof*). See Borer (2005), who points out that the meaning of a ‘noun’ is dependent on the structural configuration in which it is embedded.

<sup>52</sup> In the generative-linguistic literature such minimal nPs have been characterized by various labels, including ‘grammatical nouns’ (Emonds 1985), ‘semi-lexical nouns’ (Corver and Van Riemsdijk (2001), ‘defective nouns’ (Ross 1995), ‘light nouns’ (Kishimoto 2000), and ‘nonchromatic nouns’ (Postal 2004:138). For recent discussion of semi-lexicality, see Klockmann (2017).

<sup>53</sup> I assume that *geval*, *dien*, *wijl*, *wege*, *halve*, *et cetera* in (65) are also light nPs.

<sup>54</sup> See also *ne .. point* (litt.: not .. point), as in *Je ne lui ai point révélé mon secret* (I didn’t reveal my secret to him).

With  $F = +\text{neg}$ , we have the Neg-criterion. According to Rizzi (2006), the Criterion Condition can be looked upon as a universal well-formedness condition on the interface level LF expressing the way in which certain phrasal expressions (e.g. negative constituents, wh-phrases) are assigned scope or a special discourse property. The negative operator *pas* in (73), for example, enters into a Spec-Head relation with the negative clitic *ne*, which gives rise to the expression of sentential negation. Interestingly, the property of negation encoded by NegP is “colored” or specified by the phrasal negative marker that occupies [Spec,NegP]. This is exemplified in (75), where the negative phrases *plus*, *nullement*, and *aucunement*, which I take to occupy [Spec,NegP], co-occur with *ne*.

- (75) a. Le timbre *ne* colle *plus*.  
the stamp *ne* sticks *plus*  
‘The stamp does not stick anymore.’  
b. Le timbre *ne* colle *guère*.  
the stamp *ne* sticks *guère*  
‘The stamp hardly sticks.’  
c. Le timbre *ne* colle *aucunement/nullement*.  
the stamp *ne* sticks at.all  
‘The stamp does not stick at all.’

Adopting the Criterion condition, I propose that the syntactic configuration in (71) is another instance of this criterion. The question obviously arises as to what formal feature is shared by the small nP in [Spec,CP] and the C-head. I tentatively propose that this feature is the categorial feature [nominal] (i.e. n), as in (76).<sup>55</sup>

(76) [CP [nP mate] [C' dat<sub>[n]</sub> .....]]<sup>56</sup>

<sup>55</sup> In Chomsky (2013; 2015), the structural configuration in (76) is analyzed as an XP^YP adjunction. This adjunction configuration can remain intact if XP and YP share a formal feature (*n* in (76)). It is the shared feature that determines the categorial label of the XP^YP constituent. Thus, the complex syntactic object [nP mate]^CP dat<sub>n</sub> ..] has the label ‘n’. If XP and YP do not share a feature, one of them must be displaced in order to make labeling of the complex syntactic object possible. The copy of the displaced phrase (say, ~~XP~~) is invisible for labeling. Consequently, YP determines the label of the complex syntactic object: XP ... [XP^YP] ...

<sup>56</sup> One may wonder why the subordinator *dat* is associated with the categorial value n rather than D. Historically, *dat* is related to the demonstrative pronoun *dat* ‘that’, which is often analyzed as a determiner-like (D) element. Although an in-depth study of the categorial nature of demonstrative *dat*, and its relation to conjunctive *dat*, falls beyond the scope of this paper, I would like to point out that the demonstrative pronoun *dat* can also function as a pro-form substituting for different types of predicative phrases, as exemplified in (i). This predicative role of the neuter demonstrative pronoun *dat* possibly hints at a more noun-like “flavor” (n) than D-like flavor of demonstrative *dat*, a characteristic that may have been taken over by conjunctive *dat*.

- (i) a. Jan heeft [VP *een auto gekocht*] en Marie heeft *dat* ook. (VP)  
Jan has a car bought and Marie has that too  
‘Jan bought a car and Mary did so too.’  
b. Jan is [AP *bang voor honden*] en Marie is *dat* ook. (AP)  
Jan is afraid of dogs and Marie is that too  
‘Jan is afraid of dogs and so is Marie.’  
c. Zij zijn [NP *taalkundigen*] en wij zijn *dat* ook. (NP)  
they are linguists and we are that too  
‘We are linguists and so are they.’

I assume that the light nP occupying the specifier position adds specifying information about the event token that is represented by the embedded clause.<sup>57</sup> Borer’s (2005:34-36) notion of ‘range assignment’ seems appropriate here: the light nP *mate* assigns range (a value, *in casu*: measure/extent) to an open value, marked categorically as ‘n’ (i.e.  $\langle e \rangle_n$  according to Borer’s approach).<sup>58</sup> <sup>59</sup> As Borer (p. 35) notes, it is “[...] the categorial label under consideration [that] determines the semantic class of the elements that may assign range to it.” For the open value  $\langle e \rangle_n$ , range can be assigned by various nPs; for example, the light nP *geval* in (65b) assigns the value ‘case/instance’ to  $\langle e \rangle_n$ , the light nP *wijl* (65d) the temporal value ‘time’, the light nP *wege* (65f) the value ‘reason’, the light nP *halve* (65g) the “axial” value ‘(a)side, *et cetera*.<sup>60</sup>

In summary: it was proposed in this section that Dutch adjunct clauses contain a light nominal expression (nP) that assigns range, under Spec-head agreement, to the open value  $\langle e \rangle_n$  associated with the C-head. The nP *mate* is an example of such a range assigner in the structural environment  $[_{PP} \textit{naar} [_{CP} \textit{mate} [_{C'} \textit{dat}_{\langle e \rangle_n} + \textit{CLAUSE}]]]$ . Furthermore, it was claimed that certain pronominal expressions (e.g. *toen* ‘then’, *daar* ‘there’, and *zo* ‘so’) start out in [Spec,CP] and undergo movement to [Spec,PP], as in  $[_{PP} \textit{toen} [_{P'} P [_{CP} \textit{toen} [_{C'} C + \textit{CLAUSE}]]]$ .<sup>61</sup> Importantly, the latter analysis was also proposed for certain non-interrogative adjunct clauses that start with a wh-word, such as *wanneer*. Thus:  $[_{PP} \textit{wanneer} [_{P'} P [_{CP} \textit{wanneer} [_{C'} C + \textit{CLAUSE}]]]$ . These proposals as regards the syntax of adjunct clauses raise the question as to whether similar phenomena can be found in complement clauses. This question will be answered affirmatively in the next section. One of the range assigners that will be identified in the domain of complement clauses is non-interrogative *hoe* (i.e. *hoe*<sub>E</sub>).

<sup>57</sup> See Umbach *et al* (2021) for the use of the notion of ‘event token’, adopted from Carlson (2003), in their discussion of eventive *wie*-complements in German. For them, *wie* in eventive *wie*-complements adds information about an event token, namely that it is a stage in a set of natural continuations.

<sup>58</sup> Note that *mate*, just like eventive *hoe*, can only introduce clauses with a process/dynamic reading. In this respect, it displays the same behavior as eventive *hoe*-complements (see example (12)):

- (i) a. ... naar mate de ballon kleiner werd. (change of state/dynamic)  
to extent the balloon smaller became  
‘As the balloon got smaller, ...’  
b. \*... naar mate de ballon rood was. (state)  
to extent the balloon red was

<sup>59</sup> In Borer’s system, (76) would like as follows:  $[_{nP} [_{nP} \textit{mate}] [_n \langle e \rangle_n [ \dots ]]]$ .

<sup>60</sup> See also English ‘on behalf of’, meaning ‘representing’. The element *behalf* behaves like a noun, as is clear from its selecting an *of*-complement, and the possibility of combining with a pronominal possessor, as in *on John’s/my behalf*.

<sup>61</sup> The question arises as to why a nominal range assigner like *mate* must remain *in situ* (i.e. in Spec,CP), as in (71), while a range-assigning adverbial pronoun like *toen* must raise to [Spec,PP], as in (64a). Possibly, this relates to the categorial label of an adverbial pronoun like *toen*. In the spirit of Postal (1966), these adverbial pronouns should be analyzed as DPs rather than nPs. If so, we would have the adjunction configuration  $DP^{\wedge}[_{CP} C_n \dots]$  according to the analysis of Spec-head configurations given in Chomsky (2013; 2015); see note 55. Since ‘D’ and ‘n’ are not the same type of functional head, DP and CP do not share a feature that can function as the label of the entire complex syntactic object. The configuration can be rescued if one of the phrases (*in casu* the adverbial pronoun) is moved away (*in casu*, to Spec,PP); the trace of the displaced pronoun is invisible for labeling.

## 6. *Als* and *hoe* as nominal markers in complement clauses

As shown in (77), declarative clauses in Standard Dutch are typically introduced by the subordinating conjunction *dat* ‘that’. Notice that there is no nominal material (nP) immediately to the left of the complementizer *dat*:

- (77) Ze zeiden [<sub>CP</sub> *dat* ik moest gaan zitten]. (Standard Dutch)  
they said that I had.to go sit  
'They said that I had to sit down.'

Even though there is no nominal element present, one might argue, of course, that there is a hidden (i.e. silent) nominal element present in declarative clauses like (77). Both from a theoretical perspective and from a historical perspective, it is relevant to mention here Rosenbaum’s (1967) proposal regarding the structure of English complement clauses like (78):

- (78) They said [that he had to sit down].

According to Rosenbaum, *that*-clauses like (78) are introduced by the pronoun *it*, as in (79). This pronoun *it* gets deleted in the course of the derivation, yielding the surface pattern in (78).

- (79) They said [<sub>NP</sub> *it* [<sub>Clause</sub> that he had to sit down]].

Recently, Rosenbaum’s idea has been taken up by Kayne (2003b), who argues that “For an IP to function as the argument of a higher predicate, it must be nominalized.” Kayne’s implementation of this idea for an embedded finite clause like (78) is given in (80):<sup>62</sup>

- (80) They said [<sub>NP</sub> *FACT* [<sub>Clause</sub> that he had to sit down]].

According to this analysis, *FACT* is a silent noun that takes the finite clause as its complement.

In the spirit of Rosenbaum (1967) and Kayne (2003b), I will also assume that embedded finite clauses are associated with nominal material. In line with what I argued for in the previous section, however, I assume that the (silent) nominalizer is not a head selecting the finite clause but rather a minimal nominal phrase (nP) that occupies the specifier position of C. Just like the nominal expressions *mate*, *geval*, *et cetera* in (65), the nP in (81) acts as a range assigner: the silent nP *FACT* assigns a value to the open value  $\langle e \rangle_n$  associated with C. Schematically:<sup>63</sup>

- (81) They said [<sub>CP</sub> [<sub>NP</sub> *FACT*] [<sub>C'</sub>  $\text{that}_{\langle e \rangle_n}$  he had to sit down]].

Note that in Rosenbaum’s structure in (79) and Kayne’s structure in (80), the finite clause is embedded within the direct object NP. In the structure in (81), the nominal expression is embedded within the clause.

Although in Standard Dutch (and also in certain dialectal varieties), there is no direct (i.e. overt) evidence for the presence of a nominalizing element in sentences like (77), there

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<sup>62</sup> The other nominalization strategy that Kayne mentions involves the use of nominalizing morphology, as in non-finite constructions such as gerundial constructions (e.g. *I remember [seeing him]*) and infinitival constructions (e.g. *I saw him enter the room*), where we have silent nominal morphology in English.

<sup>63</sup> Compare with *mate* in (71).

possibly is in other dialectal varieties. Consider for this the examples in (82), which represent dialects from different parts of the Netherlands and Flanders.<sup>64</sup>

- (82) a. hje zéj [ol dat hen goenk kómm]. Oosterend Dutch (Desnerck 1972)  
 he said *ol* that he went come  
 'He said that he would come.'
- b. Toen zegden ze [(als) dat ik most neerzitten]. Aarschot Dutch (Pauwels 1958:404)  
 then said they *als* that I had.to sit.down  
 'Then they said that I had to sit down.'
- c. Ie zai [az dat ie zal kómen]. Southern-East Flemish (Teirlinck 1924:209)  
 he said *az* that he would come  
 'He said that he would come.'
- d. En (hy) heeft aan mij verhaalt, [als dat hij was aangestelt ... tot examinateur [..]].  
 and he has to me told *als* that he was appointed as examiner  
 'And he told me that he was appointed examiner.'  
 Zaans Dutch (Boekenoogen 1897/1971:88)
- e. Hai zee, [as dat e 't doun zol]. Groningen Dutch (Ter Laan 1953:113)  
 he said *as* that he it do would  
 'He said that he would do it'
- f. Wie verlangt dernöör [as dat iejluu komt]? Deventer Dutch (Kuijk 1993:145)  
 who longs for.it *as* that you<sub>plur</sub> come  
 'Who wants you to come?'
- g. Ik ben bang [a's tä de keerze geleek bevroore zulle zen].  
 I am afraid *a's* that the cherries all frozen will be  
 'I am afraid that the cherries will all be frozen.'  
 Kempenland Dutch (De Bont 1958:457)

The question obviously arises as to what kind of element *a(l)s* is and what grammatical role it fulfills within the clause in which it is embedded. As shown in (83), I propose that *als* is not an atomic lexical item but rather has a composite structure consisting of three elements: (i) *al* (litt.: 'all'), (ii) adverbial *-s*, which I analyze as a realization of little *n* (see section 3), and (iii) a silent lexical root (FACT).

(83) [al [<sub>NP</sub> n (= -s) [FACT]]]

<sup>64</sup> For discussion of the sequence *als dat*, see Overdiep (1936:604), De Rooij (1965:65-66), Leys (2005). As Leys (2005:112) notes, there are dialects in which *als* has been reduced to *l-* and fused with the subordinator *dat*, yielding the surface form *lat* (see also Paardekooper 1990).

- (i) Hij zegt *lat* de dokter kómmen is. (De Bo 1873, West-Flemish)  
 he says *l-that* the doctor arrived has  
 'He says that the doctor has arrived.'

Leys points out that *lat* is also attested in "complex conjunctions" of the type *foorlat* (before + *l* + that, 'before'), *omlat* (because + *l* + tht, 'because'), *deurlat* (because + *l* + that, 'because').

The element *al* is most familiar from nominal expressions such as those in (84), where *al* fulfills the role of a universal quantifier that combines with a referential DP (Zwarts 1991:156).

- (84) a. *al* de mannen      b. *al* het water  
       all the men            all the water  
       'all men'             'all water'

Besides its role as a universal quantifier, *al* is also found as a sort of reinforcing element on various types of “adverbs”, such as locative adverbs (85a,b), manner adverbs (85c), and temporal adverbs (85d).<sup>65</sup>

- (85) a. Hij woont in Rome en heeft (*al*)*daar* een goedlopend bedrijf.  
       he lives in Rome and has (all)there a successful company
- b. De meeste mensen (*al*)*hier* keken uit naar zijn komst.  
       the most people (all)here looked forward to his arrival
- c. De gemeenteraad besloot (*al*)*dus* op maandag 24 mei.  
       the city-council decided (all)thus on Monday 24 May
- d. Ga je (*al*)*weer* naar het café?  
       go you (all)again to the pub

Since the quantifier-like element *al* is typically found as part of a nominal expression, as in (84), I conclude that the italicized elements in (85), traditionally analyzed as being adverbs, are actually nominal expressions. According to this analysis, *aldaar*, for example, has the following structure: [*al daar* [PLACE]]. Since *al* in (85), unlike *al* in (84), does not seem to fulfill a quantificational role, but rather a reinforcing role, I tentatively analyze it as an expletive element.

Returning to the examples in (82), I propose that *als* is a nominal expression that acts as a range assigner within CP. I assume it fulfills the same grammatical role as the nPs *mate*, *wijl*, *et cetera* in the adjunct clauses in (65); that is, it assigns range to the open variable  $\langle e \rangle_n$  associated with C.

- (86) Hai zee [<sub>CP</sub> [*a(l)* [*n* (= -s) [FACT]]] [<sub>C</sub> dat $\langle e \rangle_n$  e 't down zol]]. (Groningen Dutch; (82e))  
       he said all -s that he it do would  
       ‘He said that he would do it.’

If my interpretation of *als* in the direct object clauses in (82) is correct, then it does not seem implausible to assume that eventive *hoe* (i.e. *hoe<sub>E</sub>*), which occurs at the beginning of a non-interrogative complement clause, is another instance of a nominal expression that acts as a range assigner within CP. Under such an analysis, the eventive complement in (9), repeated here as (87), would have the structural representation in (88):

<sup>65</sup> This reinforcing role of *al* is quite common, as is also clear from the following additional examples: *algeheel* (all+entire, ‘overall/total’), *al(s)maar* (all+yet, ‘continuously/repeatedly’), *alreeds* (all+ready, ‘already/by now’), *alom* (all+about, ‘all about/everywhere’), *aldoor* (all+through, ‘all the time/ceaselessly’). Interestingly, *al* is also found on certain subordinating conjunctions, such as (*al*)*hoewel* (all+though, ‘(al)though’), and *alvorens* (all+before+en+s, ‘before/prior to’). The presence of *al* in these composite conjunctions hints at the presence of a nominal expression.

(87) Ik vertelde aan Jan [*hoe* de studenten het probleem *snel en adequaat* oplossen].  
 I told to Jan how the students the problem fast and adequately solved  
 'Jan told about the students' quickly and adequately solving the problem.'

(88) ... [<sub>CP</sub> [*hoe* [<sub>nP</sub> n [*WAY*]]] [<sub>C</sub> C<sub><e>n</sub> [de studenten het probleem *snel en adequaat* oplossen]]].

As indicated in (88), I take *hoe*<sub>E</sub> to be a phrasal expression with an inner structure. It is the same linguistic expression as *hoe*<sub>Q</sub>, which was discussed in section 4.<sup>66</sup> In other words, *hoe*<sub>E</sub> = *hoe*<sub>Q</sub>. In the spirit of my interpretation of *mate* in adjunct clauses (65a) and *als* in complement clauses (82), I propose that [*hoe* [<sub>nP</sub> n [*WAY*]]] is a nominal expression that assigns range to the open variable <e><sub>n</sub> associated with C. Specifically, the value 'manner/method' is assigned to <e><sub>n</sub>. In the spirit of Umbach *et al* (2021), I assume this 'manner/method' provides information about the way in which the event token (i.e. 'the students solved the problem quickly and adequately') "evolved" (i.e., the sequence of problem-solving steps that are part of the problem-solving process).<sup>67</sup>

As is clear from the analysis in (88), *hoe* does not occupy the C-head but is located in [Spec,CP], which is compatible with its (hidden) phrasal status.<sup>68</sup> There is also independent evidence that *hoe*<sub>E</sub> does not instantiate the C-head. Consider for this the following examples:

(89) a. En ik zag [*hoe dat* hij maar zijn best deed om toch maar aandacht te kunnen krijgen].  
 and I saw how that he but his best did for still but attention to be.able get  
 'And I saw him doing his best for getting attention from other people.'  
<http://www.dekiem.be/documents/tijdschrift/2015%20De%20Kiem%204.pdf>

b. Ik zag [*hoe dat* hij nog verder in elkaar kroop].  
 I saw how that he even further in each.other crawled  
 'I saw him cringing even more.'  
<https://www.wattpad.com/218876529-destroy-us-h-24>

c. Ik zag [*hoe dat* het beest daar ginds en weder zwom, [...]].<sup>69</sup>  
 I saw how that the animal there to and fro swam  
 'I saw the animal swimming to and fro.'  
<http://www.liederenbank.nl/liedpresentatie.php?zoek=19588>

As these examples show, it is possible (for certain Dutch speakers) to have *hoe*<sub>E</sub>-complements in which there is an overt C-head *dat* in addition to the clause-introducing element *hoe*<sub>E</sub>. The existence of this pattern (*hoe*<sub>E</sub>+*dat*) suggests that *hoe*<sub>E</sub> does not occupy the C-head.

Having argued that *hoe*<sub>E</sub> is a nominal expression occupying [Spec,CP], which, just like *mate*, functions as a range assigner, I will now turn to the question as to what position the

<sup>66</sup> See Umbach *et al* (2021) for the claim that *wie*<sub>Q</sub> and *wie*<sub>E</sub> are one and the same linguistic expression.

<sup>68</sup> Recall from section 4 that there are dialects (e.g. Aarschot Dutch) in which interrogative manner *hoe* has the form *oes*, which was analyzed as a composite form with the following structure:

(i) [<sub>Noun Phrase</sub> *oe* [<sub>nP</sub> [*WAY*+n (= -s)] [*WAY*]]] (Aarschot Dutch)

Unfortunately, I haven't been able to find any examples of *hoe*<sub>E</sub>-complements in the available dialect grammars or electronic resources. So it's unclear whether *oes* is attested as a non-interrogative wh-phrase.

<sup>69</sup> Example (89c) is a verse taken from a song based on Jacob Cats's *Huwelijk* (1874), cited from *Dichtwerken van Jacob Cats naar de behoeften van den tegenwoordigen tijd ingerigt*. 3de deel. Deventer (1847:135).

manner adverbial *hoe<sub>Q</sub>* occupies in the clausal left periphery. As will be shown in the next section, *hoe<sub>Q</sub>* is moved from a VP-internal position to the specifier position of a conjunctive P(reposition). It will be shown that this specifier position also functions as the landing site for *hoe<sub>E</sub>*, which implies that *hoe<sub>Q</sub>* and *hoe<sub>E</sub>* ultimately occupy the same left-peripheral position.

## 7. (Non-)interrogative *hoe*-complements

This section investigates the placement of interrogative *hoe* (i.e. *hoe<sub>Q</sub>*) in the left periphery of the clause. Specifically, the question will be addressed as to whether *hoe<sub>Q</sub>* occupies the same syntactic position as *hoe<sub>E</sub>*. It will be argued that they do by the end of the derivation: Both *hoe<sub>Q</sub>* and *hoe<sub>E</sub>* end up in the specifier position of a prepositional complementizer as a result of displacement. Crucially, however, the position from which they move to [Spec,PP] differs: *hoe<sub>Q</sub>* moves from a VP-internal position to [Spec,PP], while *hoe<sub>E</sub>* moves from the specifier position of  $C_{<e>n}$  to [Spec,PP].

Let's start our investigation with the *hoe<sub>Q</sub>*-complement in (90):

- (90) Ik vroeg aan Jan [*hoe* zij het probleem ~~hoe~~ hadden opgelost].  
 I asked to Jan how they the problem had solved  
 'I asked Jan how they had solved the problem.'

One might hypothesize that *hoe<sub>Q</sub>* occupies exactly the same left-peripheral position as *hoe<sub>E</sub>*, that is [Spec,CP]. Recall from the previous section that, for certain speakers of Dutch, *hoe<sub>E</sub>* can co-occur with *dat* (see (89)). As shown in (91), we see a similar co-occurrence phenomenon with *hoe<sub>Q</sub>* and the subordinating conjunction *of* 'if/whether'. On the basis of this similarity, one might come to the conclusion that *hoe<sub>Q</sub>* and *hoe<sub>E</sub>* both occupy [Spec,CP], under the assumption that subordinating conjunctions *dat* and *of* can both instantiate C.

- (91) Ik vroeg aan Jan [*hoe<sub>Q</sub>* *of* zij het probleem ~~hoe~~ hadden opgelost].  
 I asked to Jan how if they the problem had solved  
 'I asked Jan how they had solved the problem.'

The conclusion that the sequences *hoe dat* (see (89)) and *hoe of* in (91) instantiate the same structural configuration should not be drawn too quickly, however. As noted in De Rooij (1965) and Hoekstra and Zwart (1994), there are patterns in colloquial/dialectal Dutch which strongly suggest that the interrogative subordinator *of* and the declarative subordinator *dat* do not occupy the same syntactic slot in the complementizer system. Some pertinent examples are given in (92):<sup>70</sup>

- (92) a. Jan vroeg [*of* [*dat* Marie ziek was]]. colloquial Dutch: Hoekstra & Zwart 1994  
 Jan asked whether that Marie sick was  
 'Jan asked whether Marie was sick.'
- b. Ik weet niet [*of* [*dat* hij nog ziek is]]. Aarschot Dutch: Pauwels 1958: 405  
 I know not whether that he still sick is  
 'I don't know whether he's still sick.'

<sup>70</sup> See Sturm (1996) for an analysis in which the sequence *of+dat* is analyzed as compound. See Zwart and Hoekstra (1997) for a reply to Sturm (1996).

As these authors observe, a wh-phrase like *wie* ‘who’ can be used in combination with the sequence *of* + *dat*. This is exemplified in (93):

- (93) Jan vroeg zich af [*wie of dat er wie ziek was*].  
 Jan wondered REFL PRT who if that there ill was  
 ‘Jan wondered who was ill.’

As indicated, I assume that *wie* moves directly to the syntactic position that precedes the subordinator *of*. In other words, there is no stopover in the specifier position of the complementizer *dat*. As a matter of fact, such a stopover is impossible if it is assumed, in the spirit of my analysis in section 6, that there is silent range assigner (say, FACT) in [Spec,CP], as exemplified by the English example (81).<sup>71</sup>

Notice that the same sequence—that is, wh-phrase + *of* + *dat*—is found with *hoe*<sub>Q</sub>. Two examples are given in (94):<sup>72</sup>

- (94) a. [...] en daarom begreep hij dat Dmitri Ivanovitsj hem vroeg *hoe of dat*  
 and therefore understood he that D. I. him asked how if that  
 het met hem ging.  
 It with him went  
 ‘[...] and that’s why he understood why Dmitri Ivanovitsj asked him how he was doing.’

<https://petermabelus.com/proza-2/rusland/>

- b. Men achtte dat niet nodig, omdat iedereen toen wel wist  
 one considered that not necessary because everyone then PRT knew

*hoe of dat* het zat.  
 how if that it was  
 ‘People thought it was not necessary because everyone knew by then how things stood.’

<https://www.uitvaart.nl/juridisch/begraven/eigen-graf-particulier-graf-of-familiegraf/grafrechten-na-100-jaar-weer-kosten-in-rekening-brengen/5543>

Also for the patterns in (94), I assume that the interrogative wh-phrase moves directly from a VP-internal position to the specifier position of *of* without making an intermediate stop in [Spec,CP]. Potential evidence for the proposal that the wh-phrase moves directly to [Spec, *of*] in patterns such as (93) and (94) comes from example (95), which is taken from Deventer Dutch (Kuijk 1993).

<sup>71</sup> Thus, the derived structure of (93) looks as follows: [*wie* [*of* [<sub>CP</sub> FACT [<sub>C</sub> *dat* [<sub>TP</sub> ...*wie*...]]]]].

<sup>72</sup> As the authors point out, there are also Dutch varieties in which the sequence *wie dat* is permitted. Example (i) is an illustration from Kempenland Dutch (De Bont 1958:457)

- (i) Goo is keke *wie dät* er is.  
 go once look who that there is  
 ‘Can you please check who is there?’

I assume that the sequences (i) *wie of dat*, (ii) *wie of*, and (iii) *wie dat* are surface manifestations of one and the same base configuration (see also Hoekstra and Zwart 1984).

- (95) Ik wete neet *wanneer of as* ik kan.  
 I know not when if as I can  
 ‘I don’t know when I will be available.’

In this example, *of* is not followed by the “conjunction” *dat* but rather by the element *as*. Recall from section 6 —see (82), especially (82f)— that *as* was analyzed as a (range-assigning) nominal expression that originates in [Spec,CP].<sup>73</sup> If this analysis is correct, then *wanneer* must move directly to [Spec, *of*] in (95). The derived representation is given in (96):<sup>74</sup>

- (96) Ik wete neet [*wanneer* [*of* [<sub>CP</sub> *as* [<sub>C</sub> C [<sub>TP</sub> ik ~~*wanneer*~~ kan]]]]].

Now that we know that the subordinators *of* and *dat* occupy different structural positions in the clausal left periphery, let us have a closer look at the grammatical nature of this layered complementizer system. As a starting point, I take the proposal, discussed in section 6, that *dat*-clauses contain a nominal marker in [Spec,CP].<sup>75</sup> Recall that this marker assigns range (e.g. ‘fact’, ‘time’, ‘reason’, *et cetera*) to the open value associated with the C-head. Now if, in line with Rosenbaum (1967) and Kayne (2003b), the *dat*-clause has a ‘nominal flavor’, the question arises as to what the categorial nature of the subordinator *of* ‘if/whether’ is. I propose that *of* is a prepositional complementizer (i.e. P).<sup>76</sup> This implies that we have the structural configuration in (97) for the embedded clause in (92a).

- (97) ... [<sub>PP</sub> Spec [<sub>P</sub> *of* [<sub>CP</sub> [<sub>NP</sub> FACT/CASE] [<sub>C</sub> *dat* Marie ziek was]]]]].

In what follows, I will try to give some evidence in support of the claim that the subordinator *of* is a prepositional subordinator. A first potential argument comes from the observation that *of*, just like the prepositions *na* ‘after’, *voor* ‘before’, *tot* ‘till’, *et cetera* can be followed linearly by the subordinator *dat*. In other words, besides the pattern *of* + *dat* in the left periphery of a clause, we also have the pattern *na/voor/tot* + *dat*. Importantly, there do not seem to be any “complex conjunctions” in which prepositions such as *na/voor/tot* are followed by *of*; that is, \**P* + *of*. The non-cooccurrence of P and *of* may be interpreted in terms of complementary distribution: these elements compete for the same syntactic slot.

A second potential argument comes from the use of the “conjunction” *of* in adjunct clauses. Before turning to such examples, consider first the minimal pair (98a) and (98b), which are variants of a conditional clause:

<sup>73</sup> Importantly, Deventer Dutch has a distinct word for the declarative subordinator ‘that’; see (i) and (82f).

- (i) Ik geeluve [*dadde* wie vanmiddag vrie hebt].  
 I believe that-IP.Pl we this.afternoon free have  
 ‘I believe that we don’t have to go to school this afternoon.’

<sup>74</sup> As noted in Kuijk (1993:145), Deventer Dutch also permits patterns in which the wh-phrase is followed by a single conjunctive element:

- (i) a. Weet iej *wat of* e ezegd hef?  
 know you what if he said has  
 ‘Do you know what he said?’  
 b. Weet iej *wat as* e ezegd hef?

<sup>75</sup> Recall Rosenbaum (1967) and Kayne (2003b).

<sup>76</sup> See Emonds (1985:chapters 6 and 7) for a similar claim about English *if/whether*. Interestingly, Emonds analyzes all embedded clauses (both complement clauses and adjunct clauses) as PPs.

- (98) a. *Indien* je dat doet, word je ontslagen.  
 in.that you that do are you fired  
 ‘If you do that, you’ll be fired.’  
 b. *Als* je dat doet, word je ontslagen  
 if you that do are you fired  
 ‘If you do that, you’ll be fired.’

In line with what I proposed in section 5, I assume that *indien* has a composite phrasal structure, with *in* being a preposition and *dien* being a nominal expression occupying [Spec,CP], as in (99):

- (99) [PP in [CP dien [C' C [TP je dat doet]]]]....

Of course, one could propose an analysis in which the left-peripheral organization of the *indien*-clause and that of the *als*-clause are unrelated. Taking cross-constructional symmetry seriously, however, I propose that the two clauses in (98) instantiate the same base structure. A symmetric analysis can be obtained if we follow the idea, proposed in section 5, that *als* is a nominal expression (see (85)) that functions as a range-assigner in [Spec,CP]. Suppose now that *als*, just like the “conjunctive” element *toen* in (64a), moves from [Spec,CP] to [Spec,PP], triggering the silence of P (i.e. IN), which may be interpreted as a doubly filled XP effect.<sup>77</sup> Schematically, where *als* stands for [*al* [<sub>nP</sub> n (= -s) [FACT]]]:

- (100) [PP *als* [P' IN [CP ~~als~~ [C' C [TP je dat doet]]]]]....

If this analysis is on the right track, one may assign the same analysis to other adjunct clauses featuring *als*. Consider, for example, the Standard Dutch temporal clause in (101a), which, under the proposed analysis, has the derived structure in (101b), where *als* stands for [*al* [<sub>nP</sub> n (= -s) [TIME]]]:

- (101) a. Je moet hem altijd welkom heten *als* hij komt.  
 you must him always welcome call when he comes  
 ‘You should always welcome him when he comes to visit you.’  
 b. [PP *als* [P' P [CP ~~als~~ [C' C [TP hij komt]]]]]....

Interestingly, there turn out to be dialects in which the temporal clause is introduced by the “subordinator” *of*, as in the West-Flemish example in (102a). Taking a cross-constructional symmetric approach, I propose that the *of*-clause has the derived structure in (102b). Just like in the Standard Dutch example in (101b), the nominal expression *als* has been moved to the specifier position of P. In this case, however, *als* does not surface and remains silent. It is P that lexicalizes, taking the form *of*:

- (102) a. Ge moet hem altijd wel ontvangen *of* hij komt.  
 you must him always PRT welcome if he comes  
 ‘You should always welcome him, when he comes to visit you.’

West Flemish, Van der Sijs (2010); <https://etymologiebank.nl/trefwoord/of>

<sup>77</sup> Example (64a) is repeated below as (i):

- (i) [PP *toen* [P' P [CP ~~toen~~ [C' C [het die dag regende]]]]], ....  
 then it that day rained  
 ‘when it rained that day, ....’

b. [PP *ALS* [P' of [CP ~~ALS~~ [C' C [TP hij komt]]]]....

As a final illustration of the derivation of adjunct clauses featuring *als* and/or *of*, consider the simulative adjunct-clauses in (103a) from Standard Dutch and (103b) from Aarschot Dutch (Pauwels 1958:403):<sup>78</sup>

- (103) a. Hij doet (als)of hij doof is.  
 he does (as)if he deaf is  
 'He acts as if he is deaf (i.e. He pretends to be deaf).'  
 b. Hij doet of dat hij doof is.  
 he does of that he deaf is  
 'He acts as if he is deaf (i.e. He pretends to be deaf).'

In line with the approach taken so far, I assume that *als* in (103a) originates as a range-assigning nominal expression in [Spec,CP] and undergoes displacement to [Spec,PP], which I take to be realized as *of*.<sup>79</sup> I assume that there is a silent nominal expression *ALS* in the simplex *of*-pattern in (103a) and the complex *of+dat*-pattern in (103b). In the latter pattern, *C* surfaces as *dat*, as in (104b):<sup>80</sup>

- (104) a. [PP *als/ALS* [P' of [CP ~~als~~ [C' C [TP hij komt]]]]....  
 b. [PP *ALS* [P' of [CP ~~ALS~~ [C' dat [TP hij komt]]]]....

According to the analysis sketched above, the conditional clause in (98b), the temporal clause in (101a), and the simulative clause in (103a) are all variations on a clause-structural theme.<sup>81</sup> I assume that meaning differences result from the nature of the silent root—for example, [*al*

<sup>78</sup> In the Deventer Dutch simulative construction, *as* also precedes *of* (see Kuijk 1993:21):

- (i) 't Lik hoast *asof* hier 't geld in 't water wördt egooid.  
 it looks almost as-if here the money in the water is thrown  
 'It looks as if people are wasting money here.'

<sup>79</sup> If the sequence *als+of* (+ clause) instantiate an adpositional structure, one may raise the question as to whether *alsof* ever appears as a simplex PP (i.e. without the presence of a clause). The pattern in (i) is interesting at this point. Note that *alsof* occurs independently, that is, without the presence of a finite clause. Of course, one might treat these constructions as clausal structures in which the finite clause has been deleted. It should be noted however, that in many cases *of* cannot be a remnant of deletion (see (ii)).

- (i) A: Jan is lange tijd ziek geweest. B: Volgens mij heeft hij lange tijd [*netalsof*] gedaan.  
 Jan has long time ill been According.to me has he long time just as.if done  
 (ii) Jan beweert dat hij morgen komt. Nu is het afwachten *of*\*(hij komt).  
 Jan claims that he tomorrow comes now is it wait.and.see if he comes  
 'Jan claims he will come to us tomorrow. Now we'll have to wait and see if he really will come and visit us.'

<sup>80</sup> Patterns in which three positions of the complementizer system are occupied, can also be found in certain varieties of Dutch:

- (i) Die verkoper aan de telefoon deed *alsof dat* hij tegen een oud dement mens bezig was.  
 that salesman on the phone did as-if that he to an old demented person busy was  
 'That salesman spoke as if he was talking to an old demented person.'

<http://www.vlaamswwoordenboek.be/definities/toon/15240>

I assume that also in this pattern *als* originates in Spec,CP and moves to Spec,PP, which is headed by *of*.

<sup>81</sup> This is in line with Chomsky's (1977) search for cross-constructural symmetry in different kinds of wh-constructions.

$[_{nP} n (= -s) [TIME]]$  in temporal clause, and  $[al [_{nP} n (= -s) [CASE]]]$  in conditional/simulative clauses— in combination with the meaning property associated with the prepositional head *of*, which I take to be associated with the property  $[-realis]$ , that is, it expresses that something (e.g. some event) is not known to be the case in reality.<sup>82</sup> I assume P is specified as  $[+realis]$  in declarative clauses, which typically express that something is a known state of affairs.

Having given some motivation for the adpositional status of the “conjunction” *of*, I now return to complement *of*-clause in (97). Taking structural symmetry as a guideline again, I assume that these complement *of*-clauses are configurationally identical to adjunct *of*-clauses. This means that *of* is an adpositional element specified as  $[-realis]$ , which takes a CP as its complement, whose specifier position is occupied by a nominal range assigner (i.e. nP). In Standard Dutch, this nominal range assigner remains silent (say, ALS). Interestingly, in certain varieties of Dutch, this range assigner may surface overtly. In Deventer Dutch, for example, we can have either the pattern in (105a) or the pattern in (105b).

- (105) a. Ik wete neet *of* ik kan.                      Deventer Dutch, Kuijk (1993:145)  
           I know not if I can  
           'I don't know whether 'll be able to (e.g. visit you)'  
       b. Ik wete neet *as* ik kan.

I propose that the embedded clauses in (105a) and (105b) have the structures (106a) and (106b), respectively:

- (106) a. ... $[PP AS [P' of_{[-realis]} [CP AS [C' C_{<e>n} [ik kan]]]]]$   
       b. ... $[PP as [P' P_{[-realis]} [CP as [C' C_{<e>n} [ik kan]]]]]$

Importantly, as was shown in (96), *as* remains *in situ* (i.e. in  $[Spec,CP]$ ) when an interrogative *wh*-phrase moves to  $[Spec,PP]$ .<sup>83</sup>

Let's briefly summarize where we are now: It was shown that the Dutch complementizer system has an articulated structure consisting of two layers: (i) a CP-layer representing a nominal “flavor”, assigned by the range assigner nP in  $[Spec,CP]$ , and (ii) a PP-layer representing  $[+/-realis]$ , whose specifier position functions as a landing site for displaced phrases. These phrases can originate in a VP-internal position, as with the manner expression *hoe<sub>Q</sub>*, or in the position corresponding to  $[Spec,CP]$ . It was noted that the latter type of movement operation—that is displacement from  $[Spec,CP]$  to  $[Spec,PP]$ —is attested both in adjunct clauses (see e.g. (64) and (100))—and in complement clauses (see e.g. (105)-(106)). Taking this as our background, let's consider again the eventive *hoe*-complements in Dutch. In section 6, it was argued that *hoe<sub>E</sub>* is a nominal phrase in  $[Spec,CP]$  that acts as a range assigner characterizing the way in which the event token “evolves”. As a final step in my analysis of *hoe*-complements, I propose that, just like the range assigners *als* in (100) and *toen/wanneer* in (64), *hoe* moves from  $[Spec,CP]$  to  $[Spec,PP]$ , where P is marked as  $[+realis]$ . Notice that this displacement operation makes the syntax of *hoe<sub>Q</sub>* and *hoe<sub>E</sub>* fully

<sup>82</sup> As for the silent noun CASE, see (65b), where we have an overt instance of Dutch ‘case’, namely *geval*. Notice also the English conjunctive expression *in case* in sentences such as: *In case (= if) she dies without heirs, her money will go to charity*.

<sup>83</sup> One may wonder why movement of a *wh*-phrase across the range assigning nP *as* does not trigger a Relativized Minimality effect (Rizzi 1990). Possibly, this relates to the grammatical nature of the displaced phrase. These are typically “big” noun phrases such as DPs, and in case of pied piping, PPs. I assume that the small range-assigning nP does not count as an intervener.

symmetric: Just as *hoe<sub>Q</sub>* moves to [Spec,PP] within the manner-adverbial expression (see (37), repeated here as (107a), so does *hoe<sub>E</sub>* within the eventive clause (see (107b)).

- (107) a. [PP [NP *hoe* + *WAY*] [P' IN [~~NP~~ ~~*hoe* + *WAY*~~]]]  
 b. [PP [NP *hoe* + *WAY*] [P' P<sub>[-realis]</sub> [CP [~~NP~~ ~~*hoe* + *WAY*~~] [C' C [TP ...]]]]]

Support for the proposal that *hoe<sub>E</sub>* moves to [Spec,PP] comes from islandhood. As shown in (108), *hoe<sub>E</sub>*-complements (108b), just like *hoe<sub>Q</sub>*-complements, are islands for extraction. This symmetry in islandhood behavior immediately follows if *hoe<sub>E</sub>* and *hoe<sub>Q</sub>* occupy the same left-peripheral position, namely [Spec,PP]. I assume that, in declarative clauses like (108c), the specifier position of P<sub>[-realis]</sub> is available as an escape hatch for extraction from within the embedded clause:

- (108) a. \**Welk probleem* vertelde Jan ook alweer [*hoe<sub>E</sub>* zij ~~wp~~ snel hadden opgelost]?  
 which problem told Jan PRT again how<sub>E</sub> they quickly had solved  
 'Jan told about Jan's quickly solving which problem?'  
 b. \**Welk probleem* vroeg Jan ook alweer [*hoe<sub>Q</sub>* zij ~~wp~~ ~~hoe~~ hadden opgelost]?  
 which problem asked Jan PRT again how they had solved  
 'Jan asked how they solved which problem?'  
 c. *Welk probleem* vertelde Jan ook alweer [~~wp~~ *dat* zij ~~wp~~ snel hadden opgelost]?  
 which problem told Jan PRT again that they quickly had solved  
 'Which problem did Jan say that they solved quickly?'

In sum, *hoe<sub>Q</sub>*-complements and *hoe<sub>E</sub>*-complements have different base structures. Their derived structures are similar, however, in the sense that both *hoe<sub>Q</sub>* and *hoe<sub>E</sub>* end up in the specifier position of a clause-introducing P. In the case of *hoe<sub>Q</sub>*, P is specified as [-realis], in the case of *hoe<sub>E</sub>* it is specified as [+realis].

## 8. Conclusion

This chapter started with the statement that homonymy is a characteristic phenomenon of human language. From a surface perspective, it is pervasively present. The question arises, however, as to whether all these presumptive instances of homonymy are real cases or only apparent ones. In this chapter, I have tried to show that the distinction between interrogative *hoe* (*hoe<sub>Q</sub>*) and eventive *hoe* (*hoe<sub>E</sub>*) is only apparent. Upon closer analysis, they represent one and the same linguistic expression. Importantly, this linguistic expression was not a simplex syntactic object consisting of one lexical atom, but rather a complex syntactic object with an inner structure. Specifically, it was claimed that this syntactic object is a nominal projection. The different grammatical roles of *hoe* were accounted for in terms of the structural configurations in which the nominal expression *hoe* is located. It was proposed that the grammar of *hoe<sub>Q</sub>* comprises the following ingredients: (i) *hoe<sub>Q</sub>* is a nominal expression that starts out as complement of P, where P heads an adjunct-PP; (ii) *hoe<sub>Q</sub>* moves PP-internally to [Spec,PP]; (iii) the entire PP moves to the specifier position of a “conjunctive” P, which is specified as [-realis] and can surface as *of*; (iv) this conjunctive P selects a CP-complement whose specifier position is occupied by an overt (e.g. *a(l)s*) or covert (say, *ALS*) nominal expression that functions as a “range assigner” in the sense of Borer (2005). As for the grammar of *hoe<sub>E</sub>*, it was proposed that it starts out as a nominal range assigner in [Spec,CP]. Thus, the

base position matters for the reading that the nominal expression *hoe* obtains. Importantly, although the base positions of *hoe*<sub>Q</sub> and *hoe*<sub>E</sub> are configurationally asymmetric, their derived positions are configurationally symmetric: They both end up in the specifier position of a conjunctive P. In the case of *hoe*<sub>Q</sub>, this P is specified as [-realis], in the case of *hoe*<sub>E</sub>, this P is specified as [+realis]. At a more general level, I hope to have shown in this chapter that for a better understanding of the syntactic composition of (non)interrogative *hoe*-clauses, it is important to apply the method of decomposition, both at the level of *hoe* and at the level of *hoe*-clauses.

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